# Visual preferences in an ageing population : design, theory, practice, education & critical reflection

## Thesis

# Visual Preferences in an Ageing Population.

## Design; Theory, Practice, Education & Critical Reflection.

**Elizabeth Wright MA (dist.) BA (hons.)**

A thesis submitted in partial fulfilment of the requirements of the Open University for the degree of Doctor of Philosophy

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## YOUR ACCEPTANCE

**1 Student details**

Your full name: Elizabeth Wright

Personal identifier (PI): R4683981

Affiliated Research Centre (ARC) (if applicable): N.A.

Department: Design Research

Thesis title: Visual Preferences in an Ageing Population.

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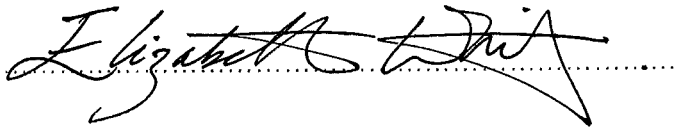
Signed: 

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# ABSTRACT

Formative periods represent early phases in life when we are particularly sensitive to experiences that influence later choices. This investigation hypothesised that the design of products associated with formative periods continues to influence preference throughout life. In design for an ageing population these preferences are important because designers often wrongly assume a decline in interest in design and physical ability. If these assumptions are prioritised there can be a detrimental effect on the visual sensitivity and emotional value products convey.

In the United Kingdom a significant proportion of the ageing population is financially independent, physically healthy and resistant to traditionally negative associations of ageing. However, limited interrogation of the design process, or of the products produced, leaves a largely youth orientated design industry ill-equipped to challenge these associations and design for consumers whose experiences differ from their own. This investigation interviewed leading design professionals to test these assumptions and to inform an innovative questionnaire to identify visual preference.

The questionnaire incorporated images of domestic products from 1930 to 1990 and asked for rapid responses reflecting intuitive preferences. A fifty five percent response rate was achieved from 5,000 questionnaires posted to respondents aged fifty to seventy five years. Analysis of the findings identified two associations. Firstly, a statistically small association between age and visual preference, older respondents preferred older products, although the association was marginal and insufficient to support the hypothesis. Secondly, visual analysis revealed a strong preference for the most familiar form of the product, proposed as representing the 'contemporary essence'. These findings challenge assumptions that ageing is accompanied by a decline in design interest. Rather, the economic and social cost of establishing a design environment reduces the flexibility of future choices. These issues are age neutral. To address these issues, a critically reflective design approach is proposed as a positive response to an ageing population in an inclusive society.

# CHAPTER 1 - INTRODUCTION

This chapter is a brief introduction to the thesis. It extends the information in the table of contents and Abstract by summarising the context of the study, briefly describing the methods used and outlining the results.

The context of this thesis is the ageing population of the United Kingdom, who are physically healthy and financially independent, yet served by a largely youth orientated design industry. Within the United Kingdom 19 million people, nearly half the electorate, are aged over fifty years, constituting a significant consumer group who spend around £250 billion annually, which equates to over 40% of national house hold spending (ONS, 2008, p.130). The demographic shift to an ageing population is dramatic but a time lag in social attitudes maintains long held negative associations with ageing and continues to inform products designed for 'older' consumers. Negative social attitudes to ageing, combined with the difference in age and experience between 'younger' designers and 'older' consumers, prompt insensitive design responses. *'Everyday products and services are designed in a way that ignores the needs of older people ... excluding them from a society that is youth obsessed'* (Innovation, 2000). As society changes to meet the demands of an ageing population, these responses have economic and social implications.

Visual preference represents a significant element within the design of product forms and in consumer selection (Bruseberg and McDonaugh, 2010). In this context products are important because *'the material landscape we construct within our personal lives ... has significant impact upon our experience ... our feelings of well being, and sense of being socially connected'* (McDonaugh, 2010). *'Objects affect what a person can do ... and because what a person does is largely what he or she is, objects have a determining effect in the development of the self'* (Csikszentmihalyi and Rochberg-Halton, 1981, p.50). *'People read deep meanings into the visual aspects of objects'* (Kalviainen and Miller, 2005, p.1).

This investigation attempted to discover whether there are formative periods in life, which establish visual preferences that continue to inform choices throughout the life course. Visual preference is defined as the ability and desire to make choices and express preferences between

products based on their appearance, either intuitively or as considered selections. The investigation focused on the visual appearance of interior domestic products as representative of *'the material landscape we construct within our personal lives'* (McDonaugh, 2010), reflecting the preferences of a group of 'older' people from the University of the Third Age.

The language associated with ageing is important and can often be pejorative, perpetuating prejudice and bias (Moore, 2005, p.3, Clarkson, 2009, p.8). In this thesis, 'older' is defined as aged between fifty and seventy-five years, with good health, financial independence and a life expectancy of at least seventy-five years. Perceptions of terms such as 'older' are sensitive to social expectations, are changing with the demographic shift and often considered relative to personal age and so this thesis refers to 'consumers post fifty'. A fifty year old may not consider themselves as 'older' but a 'younger' designer in their twenties or thirties may have different ideas.

The thesis proceeds by a review of the literature (Chapter 2) considering the contradictions of an ageing population (Section 2.1), the concept of formative periods and visual preferences (Section 2.2), the design context (Section 2.3), consumers in an industrial context (Section 2.4), and the connecting issues between the literature and real life experience of designers and consumers post fifty (Section 2.5). Qualitative and quantitative methods were selected within the investigation (Chapter 3). Design professionals were interviewed (Chapter 4) to assess the currency of the concept of formative periods for preference and to inform the design of an innovative visual questionnaire (Chapter 5). The questionnaire tested the hypothesis of formative periods amongst members of the University of the Third Age. Statistical analysis of the questionnaire found that the concept of an early formative period as the major influence for later visual preference was not supported. However, analysis of the data against the visual images revealed a strong relationship between preferences and the most contemporarily familiar form of products, proposed as representing the 'contemporary essence' of product forms. The findings are discussed and a critically reflective approach to design is proposed (Chapter 6), before drawing together the conclusions and recommendations for further research (Chapter 7).

### 1.1.1. OVERVIEW

These issues are timely as age discrimination legislation was agreed within the European Union in 2000 (EU Directive, 2000) and implemented within the United Kingdom in 2006. As falling birth rates and increased life expectancy combine to create the oldest populations the world has ever known (Wallace, 1999), it is recognised that the demographic shift to an ageing population has economic (Lloyds Bank, 1997) and social implications (Wavell, 1998). However, perceptions of the ageing population differ, on the one hand, positive perceptions of increased opportunities in health, financial security and life expectancy, whilst on the other, negative perceptions of physical decline, poverty and social dependency.

The ageing population represent *'both an opportunity and a challenge'* (UN, DESA, 2002). Inaccurate and negative assumptions of ageing as a time of physical decline and social dependency have linked notions of ageing to disability, prompting quasi-medical design responses (Barber, 1996) and a gap in empathy. However, as the health of the over fifties continues to improve, relative to previous generations, these responses are clearly inappropriate. *'Increasingly longevity is accompanied by increasing disability free life expectancy'* (Walker, 2009, p.12). These changes are not by chance as many of the improvements in health and physical ability are the result of extensive investigation into the gerontological implications of ageing (Kirkwood, 1997, Grimley Evans, 1996). These improvements have been widely researched via anthropometric studies based on measuring physical decline (Young, 1997) and applied through ergonomic modifications (Pirkl, 1994).

Since the mid 1980s UK Research Councils have supported research into ageing. In the 1990s *The New Dynamics of Ageing* program was launched by four Councils, representing the largest ever research program on ageing (Walker, 2009, p.12). In design this funding supported the development of Inclusive Design, *'the design of products and services to be usable by as large a proportion of the population as is economically viable'* (Metz and Underwood, 2005, p.65). However, much of this research focused on addressing issues of physical functionality and disability associated with ageing, particularly with issues related to life post seventy five. Research adopted problem focused and user-centred methods concentrating on usability and interaction (Kalviainen and Miller, 2005, p.1). Research into

visual preferences, beyond the effects of decline in visual acuity (Luck, 2001) is limited (Bichard, 2011). As the design of products for domestic interiors is often differentiated by the visual appearance of products, this omission has implications within an ageing population and prompts the investigation into the visual appearance of products and formative periods for visual preference.

Anecdotal evidence (Seymour, 1993, p.114, Metz and Underwood, 2005, p.174), design research (McNally, 1996), cultural beliefs (Greenfield, 2000, p.58), physiological and psychological studies (Juslin and Vastfjall, 2008) note the influence of formative experiences to shape responses throughout life. Social concepts of ageing and the role of design share an historical root in the long-term growth of wealth since the industrial revolution (Perutz, 1997, p.1919). Over the last two hundred years industrialisation, urbanisation and demographic developments have combined to create a complex network of consumer needs (Roszak, 2002) (Section 2.1). Consumer preferences represent combinations of personal constructions of self developed and expressed between people and their environment (Kalviainen, 1999, Csikszentmihalyi and Rochberg-Halton, 1981). As individuals, consumers experience conflicting perceptions of themselves and their needs, as they desire products that convey individuality by both breaking and conforming to social norms (Cholachatpinyo, 2002, p.20). At this point of internal conflict, intuitive responses to design may be driven by formative preferences. Products that provoke such intuitive responses express a *'secret functionality'* (Grinyer, personal interview, 07.07.1998) as they link individual emotional values to the broader social context (Section 2.2).

To investigate these issues the thesis focuses on design related literature but as Chayutsahakij observes, existing design specific literature has significant limitations (2002, p.104). The design process has been researched by practitioners since the early 1960s (Archer, 1963, Cross, 1984, Lawson, 1990, Jones, 1992, Glanville, 1999, Clarkson and Eckert, 2005), although reflection on the impact of design within the consumer context, beyond initial critiques has often been addressed by disciplines other than design (Chayutsahalij, 2002, p.105). For example, the broader implications of design have been considered by design historians (Dormer, 1991, Woodham, 1997), anthropologists (Miller, 1987, Douglas, 1979), psychologists (Norman, 1989, Crozier, 1994) and economists (Becker,

1996). Whilst these contributions originate from differing traditions they have, over time, entered the design literature (Margolin, 1989, p.266). This lack of reflection by the design profession on the consequences of design, together with an emphasis on design celebrities, has resulted in an impoverished and confused perception of the design process (Gedenryd, 1998, Friedman, 2000, Design Council, 2007). These limitations, in the literature, theory and methods of design, leave designers ill-equipped to design for consumers whose needs and desires may differ from their own experience, such as those post fifty. Drawing on the literature the thesis supports the economic, social and emotional value of designing products that are aesthetically sensitive to the needs of an ageing population without diminishing the usability of products (Green, 2002, p.3) (Section 2.3).

Designers addressing products for an ageing population with negative perceptions might consider that as a consequence of their age, consumers post fifty require few products which are sensitive to their preferences as they are less materialistic, have all they may ever need, or are disinterested in design. This position can create a self fulfilling cycle where the selection of products offered to the consumer is limited, preference is denied, and purchase behaviour declines because of the lack of choice. Negative purchase behaviour develops in response to social expectations. If there is widespread societal expectations that those post fifty are disinterested in consumption; consumers may unconsciously comply with these expectations in their individual purchase behaviour (Metz and Underwood, 2005, p.77). Particularly when advertising and marketing reinforce questionable social stereotypes of 'older' consumers by using simplified images of the market based on inappropriate interpretations of economic theories (Sawchuk, 1995, p.175). Increasingly there is a danger in maintaining these prejudices, as the number of younger consumers declines the risk to industry will increase if there is a failure to recognise the opportunities of a financially independent ageing population. Similarly, as life expectancy increases there is a societal need to defer retirement and maintain active social participation. For design these changes offer opportunities as *'new constraints lead to new thinking'* (Pullin, 2005, p.6).

The thesis interrogates age-related assumptions and preferences to challenge the appropriateness of design processes that follow simplistic marketing approaches, where 'age' is used as a defining characteristic

(Gabriel, 1990). Or, where consumers are assumed to have preferences related to their age and are manipulated by the market, *'to pretend to be younger than they really are'* (Laslett, 1998, p.91). Or by reducing concepts of design for an ageing population by a simplistic prioritisation of assumed age related physical decline following the 'medical model of disability' (Clarkson et al, 2003, p.598, Pullin, 2009, p.2). As the UK shifts to an ageing population *'age is becoming increasingly irrelevant as a targeting tool'* (Metz and Underwood, 2005, p.60, 61) (Section 2.4).

As traditional conceptions of life stage preferences linked to specific ages give way to attitudes related to life style choices, ageing is *'no longer perceived as a barrier to quality of life, products and environments that are less than empowering will no longer be acceptable'* (McDonaugh, 2010). *'Even purely functional things serve to socialise a person to a certain habit or way of life and are representative signs of that way of life'* (Csikszentmihalyi and Rochberg-Halton, 1981, p.20). These issues framed the investigation around the development of the ageing population, concepts of formative periods and the role of design within an industrialised context, revealing a network of connecting issues from which to interrogate the hypothesis of formative periods for product preference (Section 2.5).

The hypothesis was tested by a combination of qualitative and quantitative survey techniques defined within the methodology (Chapter 3). Semi-structured interviews with ten design professionals based in London questioned the concept of formative periods for preference (Chapter 4). These interviews identified a convergence in attitudes, which confirmed that the designers assumed preference was formed early in life and continued to inform design choices through out life, together with an assumption that interest in design diminished post forty years. The interviews also identified the importance of visual references within the design process and supported the design of a visual questionnaire (Chapter 5).

Two significant issues influenced the design of the visual questionnaire. Firstly, it was important to identify a sample whose financial and demographic characteristics were valid within the terms of the research. The University of the Third Age (U3A) shared many of these characteristics and kindly consented to help. Secondly, asking for visual preference is complicated because we may not be consciously aware of our preferences

or be able to describe these characteristics (Polanyi, 1966). To overcome these issues an innovative visual questionnaire was developed incorporating three sections. Section 1 asked for personal details, age, sex and postcode. Restricting these questions increased the efficiency of time required to complete the questionnaire, while reducing any sense of personal intrusion. A geodemographic postcode analysis validated the U3A sample as representative of the characteristics defined by the research, as aged between 50 and 75 years and financially independent (Section 5.3.2). The postcode analysis combined geography with demographics using data from the national census to provide comprehensive socio-economic information (CACI, 1997).

Section 2 incorporated product images from the 1930s – 1990s. Fourteen product categories and interior environments were selected as representative examples of interior domestic products. Respondents were asked to express their preference for the products they 'liked most', 'disliked most' and those to which they had 'neutral' feelings. Using visual images allowed a direct expression of preference free from the demands of translating preference into written descriptions, or tainted by the necessity to interpret or consciously consider their choices (Rust, 2004, Bowen, 2007). The respondents tacit knowledge of their preferences was directly translated to the design context via the visual images selected. As Porter et al found when they interviewed designers, all *'agreed that visual information is the quickest and most effective way to communicate ideas and themes to a range of different audiences'* (2005, p.5). The visual questionnaire allowed transparency within the analysis and visual references for use within the design process. Taken together the range of product images provides an overview of visual preference for interior domestic products. This use of visual images in questionnaire methods was innovative and so it was important to allow comparison of the responses against more traditional text based questions, which were included in Section 3. The combination of questions triangulated the findings and interrogated the emotional and rational responses within any product selection. The development of the visual questionnaire is proposed as a contribution to knowledge.

Analysis of the postcodes in Section 1 of the questionnaire validated the sample within the terms of the research. Analysis of the images selected in

Section 2 of the questionnaire identified two associations, one small and a second far stronger. In the first there was a small but statistically significant association between the age of the respondent and their visual preference for products. As people got older they tended to prefer older products, from the 1930s – 1960s, and to dislike more contemporary products, from the 1980s – 1990s, compared to the preferences of younger respondents. However this smaller association, for older respondents to prefer older products and dislike contemporary products compared to younger respondents, was in its use value for design slight and insufficient to support the hypothesis of formative periods as the most influential factor in later product preference. A formative period would have been strong enough to influence preference throughout life and would have meant that the products admired at the age of perhaps twenty, would still be preferred in later life. Formative periods for preference would mean those aged fifty would like different products to people aged seventy. This was not the case overall, as the majority of the respondents preferred the contemporary products from the 1980s and 1990s.

More interestingly, the analysis revealed a second far stronger preference by all age groups associated with the later design decades of the 1980s and 1990s and a strong dislike for the decade 1970. An average of 52.8% of 'liked' preference across all age groups was identified within the design decades of the 1980s and 1990s, and 23.9% of 'disliked' selection for the 1970s. The association was between preferences for the design decades rather than with the age of the respondent. To understand the detail in these clusters of preference a further analysis considered the association between individual products within their product categories and the design decades from which they were derived. A review of the data found the majority of preference was located within the first three most popular selections, where an average of 75% of preference was expressed. However, there were variations in these associations and so the statistical data was compared to the visual images for analysis. The visual analysis identified the preference was for those products whose form was most familiar within the contemporary context, and dislike for those products that were visually least familiar and furthest from this form. For example, the jug kettles of the 1980s and 1990s were preferred to the earlier rounder forms. This preference was defined as the 'contemporary essence' of product forms. In combination these findings provided evidence of a small statistical association between age and preference, and a stronger relationship

between visual preference and product familiarity related to the contemporary context.

Analysis of Section 3 identified responses to text based questions related to factors that influence decisions to purchase. The responses indicated the 'function of the product' and 'value for money' as the most important issues influencing the purchase of products. In contrast, the 'look' of the product was considered least important. If these findings were considered without knowledge of the high level of design sensitivity identified in Section 2, the responses might have confirmed the designers assumptions of a decline in design interest post forty years. The findings indicated product selections are influenced, or explained, by a complex mix of consciously and unconsciously considered factors. Text based questions alone were insufficient to identify this complexity and the challenges they pose to assumptions associated with ageing and visual preference. Together these findings are proposed as a second contribution to knowledge.

The stronger trend, In Section 2, for all ages to prefer contemporary products supported Metz and Underwood's assertion that age is becoming irrelevant as a targeting tool (2005, p.60) and challenged the validity of including the 'age' of consumers as a relevant factor when considering the visual appearance of design. These findings support an 'age neutral' approach to considering the visual appearance of product design, where the product *'caters for the specific requirements of older people and also appeal[s] to other age groups'* (Foresight, 2000, p.20). Whilst in principle these aims align with those of Inclusive Design they are not proposed under this terminology. Because as Patricia Moore observes of American thinking on these issues after, *'30 years it has come full circle and Universal Design is again narrowly defined in terms of accessibility and mobility ... rather than being part of broader design approach'* (2003, p.7). Whilst Universal Design and Inclusive Design have become associated with disability and addressing the physical functionality of design, this is not the focus of this investigation, which considers the emotional value of visual preference.

If the visual preferences identified by the U3A respondents are typical of the wider population irrespective of age, and other age groups also prefer the 'contemporary essence', then these findings have implications beyond

the ageing populations. These issues are reviewed prior to reconsidering their value within the design profession.

At the beginning of the investigation it was proposed that the findings would be developed as a design tool. This focus adopted a problem focused user-centred approach familiar to Inclusive Design. However, the analysis of the visual questionnaire identified a preference for a more visually sensitive design approach to product forms related to the broader cultural context. In an Inclusive Design context this may be difficult as Pullin warns this more culturally sensitive approach may be challenging;

> *'as it implies embracing values that some in design for disability may feel squeamish about: ... seeing design as more than problem solving ...' 'For some in the medical field, the very notion of fashion, of designs coming and going, is the antithesis of good design'* (2007, p. 2).

In view of the review of the literature, responses from the interviews with design professionals and the visual preferences identified in the questionnaire, the proposed design tool was reconsidered as a reflective, iterative and age neutral design approach. In this approach the design process challenges assumptions within the brief (Pullin, 2009, p.7) prior to reflection-on-action and in-action (Schon, 1983), to stimulate the generation of transferable design knowledge within a more strategic and sustainable approach. Acknowledging the alternative modes of reflection incorporates a layer of consciousness arguably *'enabling design thinking to become more controllable, replicable and efficient'* (Porcini, 2009, p.15), whilst protecting the central subconscious creative process that defines *'the language of design'* (Verganti, 2010, p.3). This approach aims to inspire and inform the designer in the early 'discovery' stages of the design process that are critical in defining the nature of the design problem (Design Council, 2007, p.10) by considering the needs of diverse consumer groups (Porter et al, 2005). Early intervention in the design process reduces the potential for negative assumptions to infuse products, which are then abandoned as they represent emotionally insensitive stigmatised values (McDonaugh, 2010). This approach is proposed as a third contribution to knowledge (Chapter 6). The concluding chapter discuses the findings and considers further areas of research (Chapter 7).

# CHAPTER 2: DESIGN FOR AN AGEING POPULATION

## 2.1.1. CONTRADICTIONS OF AN AGEING POPULATION

This section reviews the development of the ageing population within the United Kingdom. Expectations of life in the United Kingdom are longer today than at any time in history, 77.2 years for men and 81.6 for women (Economist, 2009, p.234). This is not by chance but rather as a consequence of: *'countless discoveries and heroic hard work on the part of scientists, reformers, public-health crusaders and do-gooders over the past two centuries'* (Roszak, 2002, p.46). It may, therefore, appear contradictory that such hard won advances in medicine have had such a limited effect on fears of ageing and negative perceptions of the process. This contradiction may seem stranger still when the effects of negative perceptions have been shown to reduce expectations of life by up to seven and a half years. In longitudinal studies, over twenty three years, Levy observed this effect: '*remained after age, gender, socio-economic status, loneliness, and functional health were included as covariates'* (Levy, 2002, p.261) and went on to reflect: *'if a previously unidentified virus was found to diminish life expectancy by over 7 years, considerable effort would probably be devoted to identifying the cause and implementing a remedy. In the present case, one of the likely causes is known: societally sanctioned denigration of the aged'* (Levy, 2002, p.268).

Negative social stereotypes of ageing have been created by a combination of limited knowledge and a basic fear of ageing as a time of decline and disease. As designers' attempt to anticipate the needs of consumers post fifty, they may inadvertently incorporate these negative assumptions into design assessments, prompting insensitive design solutions. The problem is not one of limited ability by designers but of the negative social stereotypes that inform their perceptions of consumers post fifty, combined with a lack of personal experience and, therefore, empathy to design sensitive solutions. The designer-gerontologist Patricia Moore illustrates the problem by telling how, as a design consultant, she was asked to advise on improvements to incontinence products. After a number of hours, listening to senior executives explain their perceptions of the problem, the CEO turned to Moore for her advice. Moore replied that she had drunk a lot of coffee during the meeting

and, adjusting her posture, suggested the rest of the board should do as she had done and try the product for them selves, firsthand. Within weeks the incontinence pads were dramatically reduced in size and discomfort, and within months sales soared. Moore reflects: *'we've become so fixed on the future quantity of elderly people that we've forgotten about quality. ... Design gives people choice. It defines who we are'* (1999, p.61).

An essential element of the design choices we make are driven by the emotional functionality conveyed within product aesthetics, as we define our personal: *'sense of self'* (Crozier, 1994, p.4) within these selections. If there are formative periods for product preference later expressed as intuitive choice, this emotionally sensitive information could bridge the gap in knowledge between the perceptions of younger designers and the needs of consumers post fifty, to design products to meet both physical and emotional needs. Such products might prompt a mutually beneficial cycle where emotional, social and economic benefits follow within an invigorated design environment based on inclusive principles: *'that both cater for the specific requirements of older people and also appeal to other age groups'* (Foresight, 2000, p.20). As these principles are logical within an ageing population this investigation considers why they remain so illusive within an ageist society. Specifically, what are the design implications of negative perceptions of ageing.

Bar-Pereg, an expert in ergonomics and early contributor to the Include Conferences at the Royal College of Art, warned of;

> *'the ease by which accurate and applicable knowledge can be misinterpreted and applied in an inappropriate manner. This can happen through ignorance, by mistake or through error'* (2001).

For example, if designers perceive the role of design as principally one of problem solving, the problem within an ageing population may appear to be the detrimental effects of age itself. The 'problems' of ageing then define prioritisation of the designers perception of consumer needs, stimulating quasi-medical responses (Barber, 1996). However, 'need' within a mature consumer society is a complex and contested concept (Fry, 1992, p.42). Designing for consumers post fifty questions which 'needs' are addressed and in what order of priority, physical, economic, social or emotional?

The design implications of physical decline in ageing have been widely researched, for example, anticipated changes in colour preferences as a result of the age related reduction in visual acuity (Karatza, 1995) and *'the influence of colour on the inclusivity of interior environments'* (Luck, 2001). Or *'the third age suit'* developed for Ford Motor Industries to simulate the physical decline associated with ageing (Hacker, 1999 and Hitchcock, 2001) and similar work at Sunderland University with Stirling Moss (Sherwin, 1999). These studies, and many more recorded in the proceedings of the International Conference on Inclusive Design *Include* (Helen Hamlyn Centre, Royal College of Art 2001, 2003, 2005, 2007, 2009) investigate potential changes in preference as a result of the related effects of ageing and physical decline experienced in later life. By focusing on physical utility these studies have inadvertently reinforced a 'medical model' of ageing (Clarkson et al, 2003, p.598) rather than a more inclusive 'social' perspective. The 'social model' *'sees people as disabled by the social context in which they function and proposes that change in the social context or environment can remove or alleviate disability'* (Clarkson et al, 2003, p.598). These issues, together with the rise in digital technology have created a context where *'the visual has been undervalued in recent years in favour of user-centred design focusing on usability and interaction'* (Kalviainen and Miller, 2005, p.1). Although today *'the demographics are largely positive: increasing longevity is accompanied by increasing disability free life expectancy'* (Walker, 2009, p.12). In recognising this trend, this investigation considers:

> *'visual images and style are not only about aesthetics: people read deep meanings into the visual aspects of objects, and connect them with the values that they hold important. In the era of design as a tool for experiences, exploring this 'human substance' of style becomes a more and more central question in design and in business life'* (Kalviainen and Miller, 2005, p.1).

As objects are integral to the *'development of self'* (Csikszentmihalyi and Rochberg-Halton, 1981, p.50) this investigation seeks to identify patterns of preference formed in association with the development of self in the early years of life that remain potent within preferences expressed in later life. In other words, looking for influential factors associated with youth, rather than ageing.

Whilst identifying appropriate design approaches may be problematic it is strange that design, as a contributing factor within the industrial process, has not prioritised the potential of these markets. Especially when it is estimated that those aged over fifty-five hold more than sixty percent of savings (Buck, 1990, p.50) and that there are 20.7 million people aged 50 years and over, representing more than a third of the total population (ONS, 2008). However, predicting consumer responses is complicated as insensitive and inappropriately designed products may achieve commercial success if they exist within a limited range of alternatives, or, if purchased by an intermediary with similar perceptions to those of the designer. For example, younger buyers and designers may prioritise needs and products they feel to be most appropriate for consumers post fifty and bring these to the market. The qualities of such age specific products reflect needs associated with perceptions of ageing, rather than knowledge. Within this relationship, individuals inadvertently adopt roles of provider and recipient, rather than producer and consumer. This difference in terminology reflects a subtle shift in meaning and power within the relationship between provider and user and is recognised in: *'reforms for older people [which] extend Direct Payment Schemes'* (Winchcombe, 2002) to enhance independent living and shift the power of selection directly to the consumer to choose the products they prefer.

Personal selections of products increase awareness of the importance of consumer preference and reduce institutionalised purchase of inappropriate and insensitive products. For as both Payling (1998) and McDonaugh (2010) found, products prescribed for medical conditions may be rejected by patients if they feel them to be alien to their social environment and stigmatised, even at the expense of a detrimental impact on their medical needs. If a user is denied access to choice and prevented from expressing a preference, the product becomes imposed and the purchase completed without verification from the user. This is not a simple matter of imposing perceptions of taste but diminishes the freedom of individuals to select products that reflect personal preferences and contribute to personal constructions of identity.

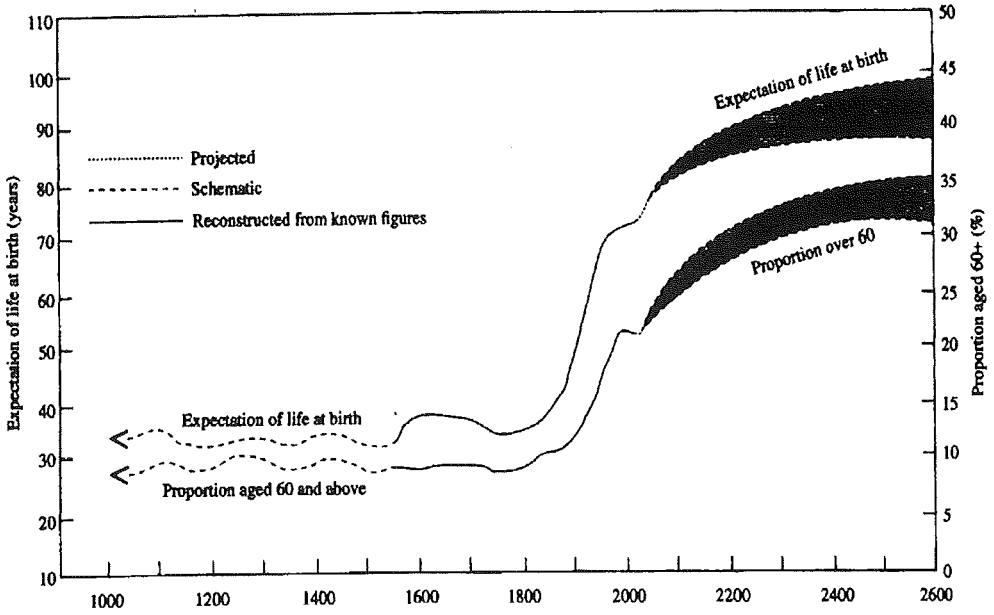
This investigation prioritised the process by which an individual's preferences are formed, rather than analysing social constructions of taste (Bourdieu, 1984), within the contemporary design context. Specifically, the investigation proposed there might be times in life when sensitivity to visual forms are

heightened, either positively or negatively, and preferences formed at these times remain potent throughout life. Through time, the initial stimuli may be forgotten but remain active, supporting intuitive judgements capable of producing: *'preference based on customers capacity to make distinctions ... and to get pleasure from them'* (Kalviainen, 1999, p.78). This process of choosing is important as it reflects a complex web of relationships between products, pleasure and personal identity that have contributed to social structures within the parallel development of the ageing population and industrialisation in the United Kingdom.

### 2.1.2 THE ORIGINS OF AGEING AND INDUSTRIAL DESIGN

The ageing population of the United Kingdom reflects an historic legacy of more than two hundred years of industrialisation, urbanisation and social development. Adrian Forty suggests the origins of modern design, as a distinct element of production, may be traced to the eighteenth century and sites Josiah Wedgwood's factory style pottery as an example (Forty, 1986, p.29). By the mid-nineteenth century, industrial production had progressed to establish vast commercial centres employing the newly urbanised population. Industrialised and urbanised centres encouraged the creation of complex social structures incorporating the products of production. As these trends combined, the impact of increased national wealth began to be reflected in growing expectations of life.

Oeppen and Vaupel suggests the continued rise in expectations of life: *'is based on patterns seen since 1840'* (BBC News, 2002). Whilst Laslett identifies the origins of the general rise in expectations of life at birth as the 1890s and describes the process as the: *"Secular Shift in Ageing'... secular being meant to convey the long-term enduring character of this irreversible change'* (1996, p.86) (figure 1).




The secular shift in ageing, AD 1000–2500.

Much of the original work on the study of ageing in the United Kingdom was completed by Peter Laslett who founded the Cambridge Group for the History of Population and Social Structure at Cambridge University with E.A. Wrigley in 1964, and later in 1984 initiated the research unit on ageing (Laslett, 1989, inside back cover). In 1989 Laslett published *A Fresh Map of Life*, detailing the emergence of the 'Third Age', followed by a second edition in 1996. The influence of this cluster of excellence remains influential as many authors on the subject are directly associated to this unit.

Figure 1: The Secular Shift in Ageing (Laslett 1996, p.87)

Perutz supports these estimations in expectations of life and identifies increased individual wealth as the influential factor (1997, p.1919). So much so that by the turn of the nineteenth century, the population had growing expectations of longevity and of medical science to sustain improvements in health. However, medicine tended to focus on medical decline, defining old age as a disease (Laslett, 1996, p.128). This emphasis appeared to confirm long held negative cultural beliefs of ageing where old age was viewed as non productive and often something to be feared. For example, Jaques speech in *As You Like It* culminates in the seventh stage of life which:

*'Is second childishness, and mere oblivion,*

*Sans teeth, sans eyes, sans taste, sans everything'* (Shakespeare, p.230).

During the twentieth century, life expectancy dramatically increased from fifty years in 1900, to over seventy-five years in the 1990s (Laslett, 1996, p.89). In parallel, fertility rates declined, until in the 1950s the population of England had aged sufficiently to reach the Third Age Indicator when: *'at least a quarter of the national population which is adult [is] ... over the age of 60'* (Laslett, 1996, p.110), adult being over 25 years of age. In the fifty years since 1950, these trends continued until: *'In the late 1990s, fertility rates [were] already at or below replacement level'* (Wallace 1999, p.5). Whilst the proportion of those aged fifty and over rose to: *'more than 19 million ... nearly half the electorate'* (Nicholson, 2001, p.8), with the financial net wealth of the over 50s age group at over £500 billion (Metz and Underwood, 2005, p.171).

Increasingly, those post fifty have come to represent a healthy and wealthy segment of the population but the long term fear and ignorance of the detrimental effects of ageing continue to reinforce ageist prejudice. Age Concern has found prejudice in the National Health Service is expressed via treatment policy:

> *'One in twenty people over sixty five has been refused treatment by the NHS, ...one in ten - have noticed different treatment from the NHS since their fiftieth birthday'* (Age Concern, 1999).

These trends are not equitable reflections of decline in health in later years but exaggerated perceptions from which to restrict treatment. Grimley Evans, Professor of Clinical Gerontology, suggests prejudice in the health service is expressed via treatment policy and: *'against evidence based on medicine'* (1996). Such prejudice ultimately culminating in journalistic accusations of: *'euthanasia by default'* (Staying Alive, 1996).

Analysing the origins of prejudice contextualises the discussion within a longer view of demographic and social change and locates negative assumptions of ageing within an industrialised society served by designers. Perceptions of the contemporary context, as a rapidly expanding ageing population at the mercy of ageist assumptions, is transformed to one of the population viewed in transition. If acknowledged, the transition might be

managed and reinterpreted as a positive opportunity, where it is accepted that: *'old age is a cultural concept, a construction that has a certain popular utility in sustaining ageism within societies that need scapegoats'* (Bytheway, 1995, p.119). *"Older person' is little more ... than a generic term for a collection of inter-linked and over lapping cohorts of people'* (Waldman, 1996, p.6). Terminology such as 'ageing' or 'older' is meaningless in any useful way, merely a reflection of: *'cultural concepts'* (Bytheway, 1995, p.119). Although the perceived disadvantages of ageing are so ingrained in the social psyche that even those within the group: *'show strong resistance to inclusion in the category of older person'* (Waldman, 1996, p.7). This may be unsurprising when: *'worried economists and politicians see a "grey wave" of decrepit paupers and greedy geezers descending upon us'* (Roszak, 2002, p.44) rather than considering: '*the experience of our older population as one of our few increasing natural resources'* (Roszak, 2002, p. 47). For this shift in thinking to inform the contemporary context we must acknowledge: *'the challenge with design for older people is not older people, but old ways of thinking'* (Woudhuysen, 1993, p.46).

### 2.1.3 THE CONTEMPORARY CONTEXT

The parallel development of the ageing population and industrialisation revealed three elements essential to understanding the contemporary context and planning for the future:

- Firstly, 'old age' is part of a continuum of ageing that starts early in life and gradually develops through the life course, making ill-defined terms such as 'older' or 'aged' meaningless in any useful way.
- Secondly, recognition of the power of ageism to falsely justify a raft of prejudice, expense to society, industry and to perceptions of value. Ageist prejudices must be challenged if a virtuous cycle, based on age neutral principles, is to offset predictions of economic slowdown and intergenerational conflict. And
- thirdly, there is a vast potential for those who meet the needs of the over fifties in an inclusive and generous manner, when those aged fifty and over: *'control 65 per cent of savings'* (Coleman, 1997, p.10) and will represent fifty per cent of the population by 2020 (Hutton, 1999, Coleman, 1997, p.31).

### 2.2.1 FORMATIVE PERIODS AND PREFERENCE

This section considers the concept of formative periods in relation to the development of visual preference in individuals and how this is influenced through time, within the social context and for their relevance to design for an ageing population.

Within a stable population, perceptions of the consumer may remain relatively constant and designers may be able to meet consumer needs by relying on previous experience of the market to guide their intuitive judgements (see section 2.3). However, if the designer has to anticipate the needs of markets that are in transition and of which they have limited knowledge, the experience on which they base their intuitive judgements may be insufficient to provide sensitive responses. As the population ages, younger designers may have limited experience, or accurate intuitive knowledge, of consumer preferences post-fifty. Within such scenarios designers may rely on cultural beliefs and social stereotypes, promoted by advertising and marketing (Gabriel, 1990), to guide their actions. One such belief is the importance of early experiences to influence adult behaviour. As the Jesuits promise: *'Give me a child until he is seven, ... and I will give you the man'* (Greenfield, 2000, p.58).

Formative or critical periods in early life have been noted in economics (Becker, 1996, p.3), marketing (Metz and Underwood, 2005, p.174) and in physiological studies (Greenfield, 2000, p.62), whilst developmental psychologists such as Piaget, propose that cognitive development follows a definable path of critical phases (Miller, 1987, p.88). Discussing the influence of early formative experiences, the neuroscientist Susan Greenfield suggests their strength may be explained by the observation that: *'It is in early childhood that experience has its most dramatic effect in determining our worldview'* (2000, p.58). From birth we follow paths of growth combining inherited abilities with socially acquired skills, facilitating a lifetime of adaptive transformations (Greenfield, 2000, p.62). But the rate of change varies and early life is dominated by a roller coaster of physical development and intense emotions, as experiences are gradually habituated to form an individuals personal perception of reality. Within this

process there may be formative periods with a disproportionate influence on later intuitive preferences.

Anecdotal support for the concept of formative periods for audio preference came from the success of Saga's radio stations that *'mainly broadcast music from the 1940s, '50s, and '60s'* (Metz and Underwood, 2005, p.110). Juslin and Vastfjall offer a detailed review of the underlying mechanisms that provoke emotional responses to music. Included in this review is reference to a *'reminiscence bump'* between the ages of fifteen and twenty five years when *'many self defining experiences tend to occur'* as part of the *'development of a self identity'* (2008, p. 54). The music associated with this period continues to provoke emotional responses throughout life.

Further anecdotal support for formative periods in visual preference emerged from a joint project between Strathclyde Regional Council Social Work Department, Blindcraft furniture and Glasgow School of Art. Furniture for residential homes for the 'elderly' was designed in consultation with residents where a range of styles were offered from which to express a preference; Elizabethan, Regency, Victorian, Art Nouveau, Art Deco and farmhouse. The accuracy of the styles presented as representative of the periods is unclear but the results revealed: *'a strong association by the elderly with Art Deco - the furniture style available at the time when they were marrying and first buying their own furniture'* (McNally, 1996, p.82). The researchers concluded: *'these criteria and preferences may have been formed when they [the 'elderly'] were setting up home themselves or, even earlier, from the furniture of their own parents'* (McNally, 1996, p.83). Alternatively, the Art Deco style offered may have represented the most contemporary style from which to choose. McNally's research supported the notion of formative periods for preference, when sensitivity to culturally acquired preferences (Gans cited in Bayley, 1991, p.69) may be greatest and noted the: *'most important common factor was the requirement to consider not just the functional but also the psychological and aesthetic needs of the users'* (McNally, 1996, p.86).

Socially driven beliefs about the appropriateness of aesthetic styles, in relation to age, inform expectations and often prompt surprise or shock when these expectations are challenged by a breakdown in traditional stereotypes, for example in fashion clothing (Lurie, 1981, p.41, Laslett, 1998, p.91). Increasingly: *'people tend to think of themselves as young'* (Palmer, 1997, p.17) and dress accordingly, even at the risk of ridicule as examples of 'Mutton dressed as Lamb'. The product designer Richard Seymour considers such preferences may be due to a desire by 'older people' to: *'hang on to what they like best, the appearance, feeling, fitness and facilities of youth'* (Seymour, 1993, p.114). Seymour rationalises this as the result of formative periods in late adolescence or mid-twenties as he reflects on his father's assertion that:

> *'he's still twenty-three inside and in a way he is because his mental views, his attitudes, even with his taste in music and clothing, were all forged in that period between adolescence and mid-twenties. That period of our lives is a crucible of values, a moment when we cast off the templates of our upbringing and start to form our own views and values. It is my belief that once these views have gelled we carry them with us as we move through life. External events modify this – gross sociological shifts, for example wars, illness, or the reduction of eyesight and some of the other things that come with age – but in essence our views and values remain as they were when forged during that formative period, and so my father sees himself as a young man in an old man's body'* (1993, p.114).

Such perceptions are not restricted to preference for music and clothing. Metz and Underwood state that *'there are three main factors influencing attitudes in later life'* (2005, p.41), age or life stage, period effect and cohort experience. Research into political attitudes identified formative periods associated with 'life stages' and 'period effects' such as significant historical changes that affect everyone exposed to the experience. 'Life stage' changes reflect the influence of previous generations as exemplars of relevant behaviour and social expectations. These are revealed in phrases with common currency such as, 'act your age', where the meaning derives from an assumption of widely held and shared expectations. 'Period Effects' identify attitudes associated with 'symbolic' issues, such as freedom of expression: *'crystallising early in life and being*

*relatively resistant to change over time'* (Heath, 1997, p.15). Major historic events, such as World Wars, or the introduction of the Welfare State, might inform preferences, for example: *'a generation that can take needs such as physical security for granted will be more likely to give priority to other goals such as quality of life and freedom of expression'* (Heath, 1997, p.19).

Formative periods experienced by individuals, within a cohort group, may form clusters of preferences specific to the cohort who shared the experience. Anyone aged between fifty and seventy-five may have shared many potentially formative experiences influencing their design preferences, for example, the economic depression of the 1930s, the Second World War, rationing in the 1940s and 1950s, the development of the Welfare State (Gabriel, 1990, p.23) and expansion of the consumer society. Each cohort may have different preferences due to their differing relative ages at the time of each significant social event, as a small child may understand such events differently to a teenager.

Intense emotional experiences may correspond to, or prompt, intense emotional responses. These points may constitute formative periods impressed into an individuals memory, for example when a specific time, or place, is recalled in response to a particular tune (Sloboda, 2000). Intensely emotional periods experienced en-mass may be felt by entire generations, or peer groups. Research within economics indicates: *'that psychology and herd instinct are just as important as economic fundamentals in driving the stock market'* (Alexander, 2000, p.20). Similar investigations into the assessment of risk on roller-coaster rides: *'have shown that there's a phenomena called 'risky shift', whereby when people are in groups they tend to take more risky decisions than they would do if they were individuals'* (Risk, 2000).

Our perceptions of preference may move en-mass as our needs adapt to the time and context, as: *'what we find attractive depends to some extent on what we need and as our needs vary over time this explains what we find during good times is different to what we find during bad times'* (Risk, 2000).

If we extend our perceptions of preference to assessments of other peoples preferences, as designers do, differences appear: *'between personal preference and the perceived general preference of others [which] would seem to result from the need for an expression of individuality'* (Shackleton, 1999, p.268). We tend to: *'judge the preferences of other people to be more for the 'normal"* (Shackleton, 1999, p.267), and in so doing define ourselves as distinct from others. If the 'other people' come with negative associations these may be unwittingly exaggerated as they inform the designer and thus the design process and the products proposed.

In these examples of individual or group preferences and assessments of other people's preferences the emphasis is on the: *'relationship between qualities of objects and the experiences that the perceiver brings to the object'* (Crozier, 1994, p.74). As opposed to: *'the view that there may be something inherent in the form of the objects that produces a positive emotional response'* (Crozier, 1994, p.74). In the first analysis, formative periods might occur within the perceiver. Whilst in the second assessment, the object defines the response, for example the design proportions of the 'Golden Section' which are based on ancient Greek cosmology and a particular theory of beauty (Crozier, 1994, p.76). Theories that focus on the object, independent of the viewer or the context, may appear tempting in their apparent objectivity. However, such simplistic assessments ignore a number of complicating factors, objects have their own histories, their own agency and may be possessed by ambivalent consumers (Miller, 2000). Personal preference, social trends and products themselves all contribute to perceptions of preference, located within the social context and based on previous experiences through time.

### 2.2.2 FORMATIVE PERIODS OF PREFERENCE THROUGH TIME

As Greenfield observes, each new experience modifies the way: *'the world is perceived. We see the world in terms of what we have seen already'* (2000, p.65), whilst actively seeking stimulation from the world around us. Although paradoxically, beyond a certain point, continued stimulation may become unpleasant (Greenfield, 2000, p.22).

In *Studies in The New Experimental Aesthetics* (1974) Daniel Berlyne, the behavioural psychologist, suggests responses to works of art reflect stimulation of a combination of underlying psychophysiological variables which: *'include degrees of pleasure, preference, or utility'* (Berlyne, 1974, p.8). Juslin and Vastfjall (2008) note Berlyne's influence in understanding emotional responses to music. In *Manufacturing Pleasures, Psychological Responses to Design* Ray Corzier identifies the significance of Berlyne's approach in: *'the articulation of functional relationships between properties of objects and events on the one hand and emotional responses on the other'* (Crozier, 1994, p.63). In other words, an individuals emotional experience of a work of art.

In design terms, Crozier referenced Berlyne's work to explain the constant changes in fashion, suggesting they: *'reflect an innate preference for novelty that is related through evolutionary processes to exploratory behaviour'* (Crozier, 1994, p.69). However, this perception of exploratory behaviour is often considered to be reactionary as:

> *'Anne Pitcher, woman's wear buying director for Harvey Nichols, opines, "Fashion tends to operate as a knee-jerk reaction to whatever has gone before. If we've had a lot of black, there will inevitably be an explosion of colour'* (Davidson, 2002, p.89).

However, Mihaly Csikszentmihalyi points out: *'Berlyne's ideas are based on ancient ideas reinterpreted through current neurological models of the mind'* (1995, p.124). Crozier acknowledges this influence on Berlyne (1994, p.61), however, Csikzentmihalyi goes on to note that at a neurological level Berlyne's model falters:

> *'in that people do not necessarily perceive order and disorder objectively. ... our reactions are not "natural" responses to colour and form. ... Visual values are created by social consensus, not by perceptual stimulation'* (Csikszentmihalyi, 1995, p.124, 125).

Personal preference for visual qualities reflect social values with specific resonance in time and may be attached to product forms that illustrate these values. Particular phases of physical and psychological

development may constitute formative periods for visual preference, which become associated with these forms and remain potent through life.

As time passes: *'memory defines who we are and shapes the way we act more closely than any single aspect of our person-hood. ... our present appears continuous with our past, grows out of it, is shaped by it'* (Rose, 1992, p.1). Memory is not fixed but a collection of: *'living processes, which become transformed, imbued with new meanings, each time we recall them'* (Rose 1992, p.2). *'The objects we surround ourselves with are the concrete symbols that convey these messages'* (Csikszentmihalyi, 1995, p.126). Artefacts collected through life create a context for future purchase behaviour. Individual preferences are mediated by the social context, which in combination forms the basis for emotionally driven choices.

Individual perceptions of preference connect external products to internal processes dynamically *'with people, among people, and between people and the total environment'* (Csikszentmihalyi and Rochberg-Halton, 1981, p.43). In this context different forms of memory link these relationships and are modified by emotions to become: *'state specific'* (Goleman, 1995, p.85). In addition, collective memory changes perceptions of the context: *'especially in a society enmeshed in its own cultural artefacts, with a history which transcends any individual experience and memory but is recorded in texts and images'* (Rose, 1992, p.8). Memory is a highly subjective and complex process guiding individual choices and combining personal experience of products within the collective memory of the time and values they encapsulate.

The construction of memory facilitates formative periods for visual preference, as early experiences form the foundations of later intuitive choices in an attempt to re-experience, or avoid, the earlier intense stimulation. *'Throughout life we constantly modify our outlook and expectations, ...Our world view, then, remains highly interactive and dynamic, but increasingly there is a theme'* (Greenfield, 2000, p.58). Early experiences converge to create formative preferences with the power to remain potent for many years.

Whilst memory becomes an evolutionary tool of individual and collective life, it guides intuitive 'natural' responses reflecting internalised preferences, refined by a lifetime of experience. It is perhaps the intuitive, 'natural' response to products that designers aspire to achieve. One in which the consumer finds equilibrium between the differing criteria of ergonomic functionality, economic viability, and also, emotional sensitivity, the *'secret functionality'* (Grinyer, personal interview, 07.07.1998) of product design. To achieve this equilibrium the designer draws on their contemporary knowledge and historic experiences, transformed into intuitive responses, to form an empathetic relationship with conceptions of the consumer. As the population ages and the chronological and experiential distance between designers and consumers widens there is a danger of loss of empathy, which is transferred to product forms that are then rejected. *'When a gulf exists between the user and the product or environment, significant psychological barriers can develop which can become increasingly difficult to remove'* (McDonaugh, 2010). To maintain empathy, sensitivity is required in understanding constructions of the 'consumer' as a combination of elements drawn from perceptions of the producer, consumer and designer. Individual perceptions of preference emerge from a mass of differing perceptions of need extended and defined within the social context (Tomes, 1998).

### 2.2.3 PERSONAL PREFERENCE WITHIN THE SOCIAL CONTEXT.

In commissioning products, marketing is often used by manufacturers to identify potential consumers and help translate perceptions of consumer needs and preferences to designers. Marketing utilises models of the consumer to translate complex networks of competing needs into simplified concepts. Within this process marketing and design have utilised Maslow's model of motivation (1943) extensively so that it is: *'perhaps the most all-embracing and influential theory in common currency'* (Rice, 1993, p.153). Maslow's model: *'classified our needs under five headings and put them in an hierarchy'* (Surridge, 1993, p.16). This hierarchy is often presented as a pyramid of needs, the basic needs form the base of the pyramid and once these needs have been satisfied: *'we move on to other and higher-level needs and attempt to satisfy these,*

*in a ladder of motivation'* (Evans, 1996, p.23). The highest level needs: *'self actualisation and esteem needs are likely to be a function of each individuals self-perception'* (Rice, 1993, p. 154). There is a: *'close and interlocking relationship between motivated behaviour and emotions'* (Lloyd, 1984, p.384, 385), as emotional stimulation motivates perceptions of needs and preferences. For example, Jordan reworked Maslow's hierarchy as a progression from functionality to pleasure (1999, Bonapace, 2002, p.196). Periods of extreme emotional stimulation influence perceptions of pain or pleasure and contribute to the construction of formative periods. However, as: *'emotions are far more predictable than thought'* (Greenfield, 2000, p.14), emotionally sensitive design solutions may arise from a predictable range of emotional triggers. Positive and negative emotional responses are provoked by association with previous experience, which become personalised by the perceptions and memories of individual consumers.

Long term associations of decline and disease with ageing have contributed to negative emotional responses and the construction of stereotypical images of ageing and a lack of empathy between designers and consumers post fifty. Such negative stereotypes of ageing have influenced the design of products, which satisfy basic physical needs but because of the loss of empathy ignore the emotionally sensitive higher needs such as self-esteem. For example, in the 'User Pyramid' (Benktzon, 1993) proposed by Ergonomi Design Gruppen of Sweden the population is modelled by physiological ability alone, with the broadest section representing:

> *'the able-bodied ... together with elderly people who have minor disabilities. ... In the middle of the pyramid are people with reduced strength and mobility. ... At the top of the pyramid we find those severely disabled. ... the higher in the pyramid the demands on the products are set, the greater the number of end-users who benefit from the products'* (Benktzon, 1993, p.19).

Egonomi's pyramid suggests that it is possible to separate physiological and psychological needs and this focus has often reinforced the medical model of disability (Clarkson et al, 2003, p.598). If physical and emotional design criteria are considered separately within the design process, the

designer may inadvertently prioritise the more easily quantifiable physical needs to the detriment of more complex qualitative emotional functionality. For example, daily living aids often reflect quasi-medical aesthetics as they over emphasise the physical function of the product. Such an insensitive emphasis may explain the high rejection rate of prescribed products identified by Payling (1998) and later by McDonaugh (2010).

Insensitive perceptions of preference have economic, physical and emotional implications for the client and end user. If designers rely on inaccurate, negative assumptions of consumers post fifty, the products they design may reflect these limitations and increase feelings of social exclusion and decrease the emotional wellbeing of the user. A belief in the concept of formative periods for preference has the power to influence design thinking, actions and the products produced.

### 2.2.4 FORMATIVE PERIODS AND DESIGN PREFERENCES

Evidence from a range of disciplines has been found to support the concept of formative periods in life for both physical and psychological development. Importantly for design, as a socially sensitive discipline, anecdotal evidence also supports a long held cultural belief in such phenomena and thus has the power to infuse design responses for an ageing population.

However, identifying the formative elements of preference is complicated because individual preferences may be moderated by major historic events, membership of groups, the cultural context and specific emotional responses at any time. For designers this is further complicated as when personal preferences are extended to consider other peoples preferences, there is a tendency to judge others as more 'normal' than ourselves, as we differentiate ourselves by an assumption of difference. In addition, objects can be considered to be preferred because they represent 'perfect' forms that are universally recognised as possessing particular characteristics of merit, or that beauty rests within the eye of the beholder.

The desire to choose between product forms relates to the pleasure experienced from positive emotional responses to visual stimuli

experienced in combination with sensual and social expectations. Multiple experiences contribute to the construction of memory and the emotional framework though which we view our worlds and the artefacts they embrace. The importance of this continual negotiation, between our concepts of self within social groups, motivates our perceptions of need. Once basic physical needs have been satisfied the desire for emotional satisfaction takes over. The danger for design for an ageing population is twofold. Firstly, negative associations of ageing emphasis physical decline, which prioritises physical criteria within the design process over emotionally sensitive visual preferences. And secondly, the belief that 'older' consumers have outdated visual preferences reduces the 'need' to design socially sensitive product forms. The result can be emotionally redundant products that visually exclude users from the subtle support of connecting with the social context.

Incorporating more generous physical and emotional design criteria may reduce the perceptual distance between real consumers and assumed characteristics of the 'average' consumer, whilst increasing the proportion of the population whose physical and emotional needs have been satisfied. The 'higher' needs, which make life worth living, require an acknowledgement of the value of both physical and emotional criteria. If the 'higher' needs incorporate emotional values, emotional triggers associated with formative periods have a functional role in a positive and age neutral design approach.

## 2.3.1 THE DESIGN CONTEXT

This section considers more than forty years of design theory to contextualise attitudes towards and expectations of the design process, and the implications for an ageing population within the design profession. The influence of design theory extends beyond any individual designers immediate actions and their network of contacts through time in publications, the products they design and the younger designers who look to them for guidance. Within the review a basic shift of perspective was revealed through time, from a process-orientated focus on systematic methods of design, to consider the nature of design problems, thinking and actions, prior to reflecting on the implications for consumers post fifty.

This review was complicated because: *'Design is first of all a process.... A designer is a thinker whose job it is to move thought to action'* (Friedman, 2000, p. 9, 10). However, there is:

> *'no single definition of design, or branches of professional practice such as industrial or graphic design, [which] adequately covers the diversity of ideas and methods gathered together under the label. ... design continues to expand in its meanings and connections, revealing unexpected dimensions in practice as well as understanding'* (Buchanan, 1992, p.5).

So whilst the investigation was set within a design context, two complicating factors emerged. Firstly: *'design research is a relatively new field [and secondly] design is inherently interdisciplinary'* (Friedman, 2002, p.2). *'Increasingly, scholars from fields such as anthropology, psychology, sociology, and aesthetics are addressing questions in their research that are related to design'* (Margolin, 1989, p.266). *'Literature on the design process is vast, yet mostly inconclusive'* (Design Council, 2007, p.3), whilst the literature on design by practitioners remains limited. Limited interrogation of the design process leaves designers vulnerable to the judgements from alternative and unfamiliar disciplines and reduces their ability to strategically modify behaviour to meet challenges beyond their existing range of experiences. By investigating the development of design theory, as distinct from Rayner Banham's *'design criticism'* discussed within popular culture (Margolin, 1989, p.275), professional

attitudes to designing for an ageing population may be exposed and ways to propose positive responses identified.

### 2.3.2 DESIGN METHODS

Design methods, as a discrete subject of research, began in the 1960s (Glanville, 1999, p.80). Between April 1963 and August 1964 *Design* published seven articles by Bruce Archer detailing, *Systematic Methods for Designers.* Fascinated by the increasing complexity of manufacturing, marketing and material science Archer analysed: *'methods of problem solving, borrowed from computer techniques'* (Archer, 1963, p. 47).

By 1970, design research had diversified sufficiently for John Chris Jones to publish *Design Methods*: *'a review of the new design methods'* (1992, 2nd ed. p.xviii), offering thirty-five new methods and observing of the design process:

> *'many writers agree, .... it includes three essential stages of analysis, synthesis and evaluation .... breaking the problem into pieces, .... putting the pieces together in a new way .... and testing to discover the consequences of putting the new arrangement into practice'* (Jones, 2nd ed., 1992, p.63).

Jones notes these stages are cyclical: *'each is progressively less general and more detailed'* (1992, 2nd ed., p.64), renaming the three stages: *'divergence, transformation and convergence'* (1992, 2nd ed. p.64).

In *Design Methods* Jones was aided by Nigel Cross, who later edited *Developments in Design Methodologies* (1984) and suggested:

> *'the 'movement' had progressed through four stages: prescription of an ideal design process, description of the intuitive nature of design problems, observation of the reality of design activity, and reflection on the fundamental concepts of design. Progressing through these stages might well have been an inevitable process of maturation'* (Cross, 1984, p.x).

This progression might also have been prompted by a growing realisation that the theoretical separation of stages and logical order of the process defined by 'design methods' did not reflect the reality of the design

process. Or as Gedenryd decisively declared after an extensive analysis of design methods, *'they don't work'* (1998, p.59).

Whilst the design 'movement' may have theoretically matured and the emphasis in the investigation of the nature of design shifted, Dorst (1995, p.262) refers to Simon's (1973) suggestion that in practice many designers still frame the design process in terms of 'problems' and 'solutions'. Design is seen as a rational problem solving process. Using this model, there is a danger that design responses for an ageing population frame 'ageing' as the 'problem' to be addressed, and consequently reinforce negative associations.

### 2.3.3 DESIGN PROBLEMS

Acknowledging the perception of design as a problem solving process Cross notes: *'the one point of agreement is that design problems are inherently ill-defined'* (Cross, 1984, p.105). Or as Rittel and Webber declare: *'planning problems are wicked problems'* (Rittel, 1984, p.135). *'The information needed to understand the problem depends upon one's idea for solving it'* (Rittel, 1984, p.163).

Rittel and Webber's proposal, that design problems are *'wicked problems'* acknowledges: *'Social problems are never solved. At best they are only re-solved over and over again'* (Rittel, 1984, p.136). This analysis effectively absolves the unscrupulous designer from responsibility for their actions by accepting solutions may only be temporary and: *'can only be meaningfully defined for a given context'* (Powell, 1997, p.5). Responsibility can be located within the context as it changes, rather than the designer who responds to the context with a knowingly temporary solution.

Buchanan considered 'wicked problems' and their relationship to the design process to suggest: *'the design process is divided into two distinct phases: problem definition and problem solution'* (Buchanan, 1992, p.15), analysis followed by synthesis. However, Buchanan goes on to note two weaknesses in this apparently logical, linear description:

*'one, the actual sequence of design thinking and decision making is not a simple linear process; and two, the problems addressed by designers do not, in actual practice yield to any linear analysis and synthesis yet proposed'* (Buchanan, 1992, p.15).

Following this analysis Buchanan answers the question Rittel and Webber (Rittel, 1984) imply but leave unasked:

*'why are design problems indeterminate and therefore wicked? .... Because design has no special subject matter of its own apart from what the designer conceives it to be'. ... 'The problem for designers is to conceive and plan what does not yet exist'* (Buchanan, 1992, p.16,18).

Paradoxically, it may be the indeterminacy within perceptions of the problem, which offers design opportunities for numerous innovative solutions. A proactive designer, with a positive perception of consumers post fifty, could propose an analysis of the context as one of opportunity and design products to reflect this positive perception.

### 2.3.4 DESIGN THINKING

If problems are indeterminate, the process by which they are perceived as such requires analysis. Bryan Lawson describes *How Designers Think* (1980, 2nd ed.1990) as: *'a book about design problems'* (1990, p.2). However, Lawson acknowledges his analysis reveals assumptions within the author and his subject discipline, and warns:

*'the danger is that each may be conditioned by his own design technology. Design situations vary not just because the problems are dissimilar but also because designers habitually adopt different approaches'* (Lawson, 1990, p.4).

In an attempt to expose these different subject dependant-thinking styles, Lawson completed a series of experiments between 1972 and 1979 with science and architectural students (Lawson, 1990, p.30). The two groups adopted strikingly different strategies: *'scientists problem-solve by analysis, whereas designers problem-solve by synthesis'* (Cross, 1982, p.223). If design problems are classified as ill-defined, wicked problems, it may be impossible for complete analysis or, therefore, a 'correct' solution to be guaranteed: *'In this context a solution-focused strategy is clearly preferable to a problem-focused one'* (Cross, 1982, p.224), assuming any result is better than none.

If designers problem-solve by synthesis of the 'known' criteria, in a solution-focused strategy, it may be logical to assume the design process to be experience dependent (Lawson, 1990, p.115). The potential of a synthesis led design approach was supported by protocol analysis of the design activity by Lloyd and Scott, who found a dependent relationship between design and experience: *'as designer experience increases, generation becomes the dominant mode of reasoning and deduction becomes less important'* (Lloyd, 1994, p.133). Generation is defined as bringing: *'something new to the design situation'* (Lloyd, 1994, p.127), whereas: *'deductive utterances involve perceiving and representing the problem'* (Lloyd, 1994, p.127). Lloyd and Scott's findings noted the value of previous experience in understanding: *'the specific needs of the problem'* (Lloyd, 1994, p.127) and supported Lawson's suggestion that models of design research may be dependent on the disciplines from which the research originated. As Friedman points out: *'it is not experience, but our interpretation and understanding of experience that leads to knowledge'* (2000, p.19). It is the designers understanding of experience that leads to their knowledge. The implications, for an ageing population, are that if the designers' understanding is based on negative assumptions, it follows that their knowledge will reflect these assumptions and be embedded in the design solutions offered.

Lawson identified two relationships within design, the first, between the solution-focused strategy and problem solving approach adopted by designers, and the second, the relationship between experience and design. However, Fry postulated a third relationship when he observed the design solution: *'exists only in a dependent relationship to needs. If the definition of need is not deconstructed, the ... solutions will remain either limited or flawed'* (Fry, 1992, p.43).

Fry notes the underlying assumptions carried by designers and infused into their actions, by the education and socialisation practices imposed on them, enables them to be responsive to societal needs. Fry goes on to argue that need will be an increasingly:

> *'contested category: the ecological needs of the planet are clearly at odds with the economic and cultural practices of many of the people*

*who populate it; more simply, the needs of the world's poor are not the same as the needs of the well off'* (1992, p.42).

Similarly, the 'needs' of consumers post fifty may not equate to those perceived as appropriate for them by younger designers.

Reconsidering Nigel Cross's four stages of development in the 'movement' of design theory in *Design Methodologies* (Cross, 1984, p.x), for design for an ageing population, *'prescription of an ideal design process'* (Cross, 1984, p.x) appeared valid if the criteria were limited to those which could be simply analysed. For example by separating and simplifying physical needs from psychological and emotional issues, as in Ergonomi's User Pyramid (Benktzon, 1993, p.19). Whilst, *'description of the intuitive nature of design problems'* (Cross, 1984, p.x) revealed that the products and processes of design are infused with undeclared and unacknowledged factors. As these factors influence perceptions of ageing and are resistant to complete analysis, the desire to identify fundamental motivations moved the investigation towards Cross's third stage of developments, *'observation of the reality of design activity'* (1984, p.x) in practice.

### 2.3.5 DESIGN ACTIONS

By the mid-1980s researchers recognised and were trying to bridge the gap in understanding between: *'how the [design] process is described by design theorists and the practical activities which designers undertake'* (Tovey, 1986, p.20). The focus turned to drawing as it: *'is the quickest and most fluid modelling technique'* (Tovey, 1986, p.20) central to the design process.

In reviewing an exhibition of working drawings Crook argues: '*drawing in this context typically represents one of three moments in the creative process: gestation - development – communication'* (1999, p.2).
However, Crook questions the: *'appropriateness of drawing as a medium for generating concepts'* (1999, p.4) and goes on to ask:

> *'Could it be that drawing inhibits innovation by leading the designer directly to solutions which merely manipulate pre-existing archetypes or generic conventions rather than breaking them'* (1999, p.5).

Working drawings may not reflect a research process that seeks to identify new sources of information but rather relies on deductive reasoning from what is already known. This analysis supports Lloyd and Scott's (Lloyd, 1994) findings on the effects of experience, where generative design activity increased whilst a search for understanding decreased, as the designers assumed knowledge based on their previous experience. However, as the designer gains experience and is able to rapidly generate solutions, by drawing on this experience, there may be *'an increase of solution poverty'* (Ward, 1984, p.229) from synthesis of known solutions, rather than proposing original alternatives. The designer requires experience, but also new experience for each new context and an awareness of the risk of relying on variations of previous solutions. Cross agrees:

> *'most run-of-the-mill designing is actually based on making variations on previous designs ... the designer's very first conceptualisations and representations of the problem and solution are therefore critical to the procedures that will follow'* (1990, p.129,130).

However, Cross challenges the assumption that synthesis leads to: *'compromising between conflicting requirements, ... good design actually resolves conflicts without compromise'* (1990, p.128). Cross goes onto suggest the resolution of conflicts may be enhanced by 'apposite' proposals within the creative process, where thinking shifts: *'to a new part of the solution space'* (1997, p.427), rather than adopting: *'a radical shift of perspective'* (1997, p.427). Shifting perceptions of ageing *'to a new solution space'* may be easier than attempting to radically alter the deeply held and potentially negative assumptions of the designer, whilst at the same time enable a new range of elements to be introduced into the design process from which to synthesise new solutions. This may explain the emphasis on user-centred methods in inclusive design. By focusing on 'users' and their 'problems' the design criteria can once again be limited to those that can easily be analysed. As Pullin observes, inclusive design *'often exhibits attitudes more akin to traditional medical design'* (2009, p.2). In this model the designer need not challenge negative assumptions or the impact these may have on the products they design. However, to address the emotional functionality of products and the potential impact on the user requires the designer to step outside their

immediate assumptions and acquire a reflective awareness of the limitations of design that unconsciously maintains the status quo. This need for a new awareness of design thinking leads to Cross's fourth stage of development in *Design Methodology, 'reflection on the fundamental concepts of design'* (Cross, 1984, p.x).

### 2.3.6 REFLECTIVE DESIGN

Schon's (1983) analysis of design, cited by Dorst (1995, p.262), describes how solutions emerge through reflective practice, rather than rely on a limited analysis of 'problems' prior to proposing solutions based on personal experience alone. As reflective practice challenges assumptions, and acknowledges alternative perspectives are possible, there is a simultaneous expansion of the range of references consulted within the design process. A reflective response increases the potential to challenge negative assumptions of ageing and empathise with consumers post fifty, rather than starting from a perception of ageing as a set of disability related problems requiring quasi-medical solutions. Cross describes this expanded view of the design process where:

> *'creative designing seems to proceed by oscillating between sub-solution and sub-problem areas, as well as decomposing the problem and combining solutions. ... The 'creative leap' is not so much a leap across the chasm between analysis and synthesis, as the throwing of a bridge across the chasm between problem and solution'* (1997, p.439, 2006, p.78).

Remembering that 'problems' and 'solutions' are defined by a particular position located in time and context, there is also a potential chasm between contested perceptions of the problem and solution.

Solution poverty can occur by continually framing: *'design as essentially a problem-solving process'* (Ward, 1984, p.232, Pullin, 2007, p.1). However: *'as many designers have been trained as problem solvers rather than problem definers'* (Margolin, 1997, p.230), this is easier to observe than amend. The potential for change exists because there is an ambiguity within the language and action: *'at the heart of the creative design process'* (Lawson, 1997, p.174), which is embodied in the looseness of design sketching and parallel lines of thought discussed by

Cross (1997, 2006). However, it is essential not to misinterpret ambiguity for ignorance. As Ward (1984, p.229), Cross (1990, p.129, 130) and Crook (1999, p.5) all warn, reworking variations on existing designs is unlikely to generate new solutions, or prompt a move *'to a new part of the solution space'* (Cross, 1997, p.427, 2006). The value of ambiguity rests on the richness or poverty of the knowledge on which it draws.

Lawson proposes Schon's analysis of the design process incorporates this understanding of ambiguity within design sketching as literally: *'a conversation with the drawing'* (1997, p.172). Lawson extends this analysis of the design process to include conversations between the designer and the client. For example, within Eva Jiricna's design process verbal descriptions: *'allows her clients to interpret shades of meaning not allowed by the drawing'* (Lawson, 1997, p. 175). Within the client-designer relationship conversations negotiate the verbal-visual translation between potentially differing thinking styles and areas of knowledge. Solutions and problems may originate within the design brief but emerge from the discussion: *'From this point of view, 'Talking design' is design'* (Tomes, 1998, p.142). To offset the power of negative assumptions in designing for consumers post fifty and move to one of positive perceptions of opportunity, a broader range of knowledge is required beyond the limited experience of youth. Designers *'must expand and push beyond their own empathetic horizons'* (McDonaugh, 2010).

Drawing on an expanded range of knowledge enriches the ambiguity and uncertainty within design that reflects the indeterminate nature of design problems. Incorporating positive information has the potential to shape perceptions of the problem and process prior to selection of the solution. As designers acknowledge, the ageing population requires products to satisfy emotional and physical needs (Jorden, 2001, Pullin, 2009). While the flexibility and ambiguity at the heart of the design process offers the potential to move design thinking: *'to a new part of the solution space'* (Cross, 1997, p.427), where well informed, positive perceptions prompt emotionally sensitive solutions.

In this context *'Design is first of all a process ... A designer is a thinker whose job it is to move thought to action'* (Friedman, 2000, p.9, 10).

However, in an industrial context, for thoughts and actions to be innovative and not merely intuitively reworking existing flawed solutions requires *'the designer / designer thinker to add a layer of consciousness to that approach, enabling design thinking to become more controllable, replicable and efficient'* (Porcini, 2009, p.15). The conscious layer is required to challenge unconscious assumptions within the designer and their design process, to identify positive information and creatively translate this into opportunities for business, in ways that are understood by business (Verganti, 2010, p3). It is then, once positive perceptions of ageing have consciously been acknowledged that the intuitive, creative element within design offers opportunities for the designer to infuse products with positive emotional experiences. In these products it is in the;

> *'attention to detail, of acknowledging that rarely is any aspect of design a purely technical or even ergonomic consideration. Our emotions are affected by the minutia of our interactions both with the designed world and with each other'* (Pullin, 2009, p.8).

Products provide the material landscape for these interactions (McDonaugh, 2010).

For the investigation to make a positive contribution to design for an ageing population, design is conceived as more than primarily a problem based process, defined by client criteria and project briefs. *'Breaking new ground demands new perspectives and sometimes this comes from challenging the assumptions written into the brief itself'* (Pullin, 2009, p.7). As Raby explains:

> *'Most designers, especially industrial designers, view design as somehow neutral, clean and pure. But all design is ideological, the design process is informed by values based on a specific world-view, or way of seeing and understanding reality'* (Dunne and Raby, 2001, p.271).

The relevance of design rests on its ability to interpret social values, whilst recognising that in doing so it is also an active participant in defining attitudes and aspirations within an industrialised social context.

## 2.4.1 CONSUMERS IN AN INDUSTRIAL CONTEXT

This section considers why design for an ageing population is so relevant today. As Laslett observes the population has been ageing since the mid-nineteenth century and the secular shift in ageing occurred in the mid-twentieth century (1996, p.86). Whilst ageing as an important social phenomena began to be widely discussed in the 1980s it was another twenty years before age discrimination legislation became a realistic proposition. Laslett refers to this delay in societal recognition of the changing demographic profile as *'cultural lag'* (1997, p.1805). If there is a cultural time lag between the emergence of ageing as a phenomena and its recognition as a significant shift in social structures this raises the question, what are the implications of such long-term resistance to acknowledging the ageing population? Why if modern design is commissioned by industry to serve the needs of a consumer society, have the needs of such a large section of society remained unacknowledged?

An alternative view to the investigation could suggest that however unpleasant the negative perceptions of ageing, they do in fact reflect reality. Formative periods of preference might be interesting but ultimately unimportant, as consumers post fifty are less materialistic, already have everything they might ever need and are disinterested in design. Put bluntly, consumers post fifty do not represent a design opportunity and there is little reason to be interested in their preferences beyond the physical functionality of specialist products. Designers could be proactive and propose alternative design approaches but this would represent a high-risk strategy, especially if design is commissioned to follow the clients brief and assume that they know their markets best. Whilst the historic development of ageing and industrial design offer interesting insights of past performance they do not guarantee future purchases. Faced with such an expanding market, the most productive option might be to ask consumers what they want. Unfortunately, attitudes are no guarantee of future behaviour (Oppenheim, 1992, p.176), people rarely know what they want until they see it. This is particularly true of innovative interventions proposing unfamiliar concepts. For example, Mr. Morita, Chairman of Sony and initiator of the 'Walkman' personal stereo, testifies to the resistance within Sony and scepticism of any demand for

personal mobile music systems in the 1980s (Morita, 1992). Such devices did not exist at the time and so it was difficult to conceive of the need, or consumer desire, sufficient to support such research and development.

Perceptions, expectations and assumptions are important because we see life in terms of what we have already seen (Greenfield, 2000, p.65) and, therefore, plan for the future based on previous experience. Expectations can create self-fulfilling prophecies: *'to 'see' a new idea we have first to imagine or speculate, so that the idea has a brief existence in our mind. Then we may be able to see the idea in the information'* (de Bono, 1994, p.119). To share these ideas we construct models which have the additional value: *'in their power to expose associations'* (Jarrard, 2000, p.233). These associations can be modelled in alternative scenarios and tested prior to committing resources. The power to frame alternative scenarios can also carry dangers if it is forgotten that each scenario is defined by selective criteria. In a model it is possible to discount significant factors such as the ageing population, or the importance of emotional criteria as in Ergonomi's User Pyramid (Benktzon, 1993). If the criteria on which models are based are not challenged, habitual use of the model can create confusion as it is mistaken for a representation of reality, rather than a model of a possible reality. For example, the map of the London underground system is clearly topographical, but many are surprised by the relationship to the surface geography if they use it as reference at street level. Familiarity with one model can confuse the user if used in an alternative scenario. The wide spread 'cultural lag' observed by Laslett questioned which models had the power to maintain the negative perceptions of ageing, against the economic and social imperatives for change?

The demographic shift to an ageing population has been a gradual process, but by ignoring it for so long the phenomena now appears to require innovative solutions, rather than a steady evolution of ideas. Whilst highly innovative products, such as the Walkman, require a leap of faith, a more evolutionary approach to business can draw on economic studies of consumer behaviour to guide decisions. By examining models on which market expectations are based it may be possible to propose

ways to change perceptions to enhance positive innovations. For example, consumer motivation can be modelled as a series of rational considerations, where the propensity to adopt innovation follows a predefined distribution through the population, creating perceptions of stable consumer markets (Rogers, 1995, p.262). In a transitional ageing population, perceptions of stability can only be maintained if the assumptions on which these are modelled remain unchallenged. If these assumptions are inaccurate, the gap between the model and reality increases and with it the economic risk to those who follow its guidance. However, just as models map consumer behaviour they are also used to manipulate behaviour. In order to identify consumers and create concepts to attract new consumers, industry commissions advertising and marketing to justify and sustain their world view. Each element within the relationship relies on the others to maintain its position; any change will question the basis on which the other elements rest and inevitably be perceived as an increased risk. Hence outdated positions are maintained long after they cease to reflect reality and contribute to the construction of a group blind spot, or 'cultural lag'. The long term emphasis on youth culture is irrational but more worryingly, masks a general awareness of the demographic shift to an ageing population and therefore, the opportunity for positive change.

### 2.4.2 RATIONAL CONSUMERS

With the onset of mass production early economic models attempted to rationalise production, for example Frederick Winslow Taylor (1856 – 1915) was an early exponent of measuring and remodelling industrial production for greater efficiency (Druker, 1993, p.30). Later these models were extended to incorporate and interpret consumer behaviour by assuming individuals apply similar concepts of rational efficiency to consumption as they aim to maximise the utility of their purchase decisions (Begg, 1994, p.77). Whilst the assumptions on which the theory of consumer choice rests are considered: *'rather plausible'* (Begg, 1994, p.77) by modelling these assumptions as mathematical equations, economists possessed a powerful yet simple tool for analysis (Becker, 1996, p.4). However, the simplicity and strength of the analysis only works if the assumptions are considered sufficient as: *'there is no*

*justification in traditional utility theory for assuming anything about physical or spiritual needs, still less about envy'* (Douglas, 1979, p.6). Whilst the terminology may differ the criteria reflect emotional responses familiar to critiques of design. For example, at a recent inclusive design workshop Mike Woods defined the *'X-factor in product design as "I love it, I lust after it, I would kill for it"'* (2009, p.3). This does not assume economists are unaware of the limitations of utility theory, as Douglas and Isherwood quote Michael and Becker's (1973) reservations:

> *'For economists to rest a large part of their theory of choice on differences in tastes is disturbing, since they admittedly have no useful theory of the formation of tastes, nor can they rely on a well-developed theory from any other discipline in the social sciences, since none exists'* (Douglas, 1979, p.7).

Acknowledging these reservations Becker (awarded the Nobel Prize for Economics in 1992) extends the basic theory of utility maximisation within consumer choice to incorporate:

> *'experiences and social forces into preferences or tastes through two basic capital stocks. Personal capital, P, includes the relevant past consumption and other personal experiences that effect current and future utilities. Social capital, S, incorporates the influence of past actions by peers and others in an individual's social network and control system'* (Becker, 1996, p.4).

Becker returns the compliment to Douglas (1983), acknowledging her assessment of an individual's indirect influence over their social capital as: *'the real moment of choosing is ... choice of comrades and their way of life'* (Becker, 1996, p.13).

Whatever the strengths, or limitations of these theories they have an additional value in that they are discussed and have currency within the disciplines from which they originate. The attraction to industry of such assessments is that they appear to impose clarity and order on an otherwise chaotic and complex process. In a similar way, Roberto Verganti suggests this is how:

> *'companies like IDEO who have successfully transmitted the message to business that design is not art, but a process. They've helped to make the practice of design more visible and therefore apparently controllable, which business people like a lot'* (2010, p.3).

By reducing the elements within the equation to those that can be rationalised, a perception of rationality is created which appears to reduce the risk to industry. For example, ignoring the needs of an ageing population theoretically removes the risk of designing for 'unknown' consumers. An ageist design industry limits the choices available to consumers and their ability to rationally express their preferences, effectively ignoring and excluding the ageing population from the consumer context. However, continuing to pursue youth orientated design will ultimately increase the risk to industry, as the perceived 'benefits' of avoiding unknown consumers is outweighed by increased competition for a diminishing youth market, which ignores the potential of an expanding market post fifty. New markets require new knowledge, new perceptions of traditional models and concepts of innovation. For design these changes offer challenges as *'new constraints lead to new thinking'* (Pullin, 2005, p.6) and opportunities for innovation.

### 2.4.3 PATTERNS OF INNOVATION

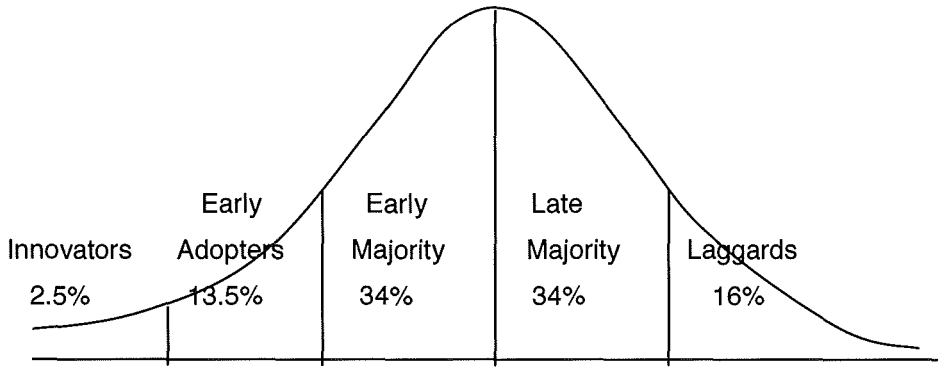
Innovation, the process of making changes by bringing new ideas into actions, requires new understanding. When traditional concepts, such as attitudes to ageing, are so deeply held this is a difficult process. According to Everett Roger's theory of diffusion of innovation (1962), innovation spreads by the diffusion of new ideas through populations.

> *'Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas'* (Rogers, 1995, p.5).

Roger's theory offers a model to propose re-conceiving perceptions of the ageing population and the role of design to one of positive opportunity. Roger's theory is pertinent as it is widely used by marketing, and therefore, influences design by association, and is extensively discussed in nearly 4,000 publications (Rogers 1995, p.xv), including David Metz and Michael Underwood's *Older, Richer, Fitter, identifying the customer needs of Britain's ageing population* (2005).

The concept of diffusion is based on the observation that: *'many human traits are normally distributed. ... Hence, a variable such as the degree of*

*innovativeness is expected also to be normally distributed'* (Rogers, 1995, p.258, 259). The rate of adoption is then modelled as a bell-shaped frequency curve and the rate of adoption estimated (figure 2).




Based on an individual's degree of innovativeness, the rate of innovation adoption, five adopter categories were proposed: *'(1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards. Rate of adoption is the relative speed with which an innovation is adopted by members of a social system'* (Rogers 1995, p.37). Percentages represent the proportion of the population in each phase.

Figure 2: Roger's Adopter Categorisation on the Basis of Innovativeness (1995, p.262).

Whilst the model of diffusion is tempting in its apparent simplicity, it is this perception of simplicity, which makes it so easily misinterpreted. Such limited understanding within business and marketing has reduced the ability of the design industry to meet the needs of the ageing population for three significant reasons.

Firstly, the concept of the life cycle profile, based on the bell-shaped adoption curve, is perceived as limited when in fact numerous variations are possible (Midgley, 1977, p.165, 166). By allowing the model to shape expectations of adoption of innovation, the growth stage in the curve may be perceived as relatively short, compared to the mature phase. Naïve use of the model to guide expenditure may interpret any decline in sales as the onset of the later phase and result in a rash reduction in promotion. Reduced promotion encourages a decline in sales and appears to confirm the model, rather than realising that misinterpreting the model has created a: *'self-fulfilling prophecy'* (Midgley, 1977, p.167, 168). A cycle is prompted

where negative perceptions, guide negative actions that stimulate negative responses.

Secondly, linking human life cycles to the model of adoption creates a perception of youth associated with the early innovation phase and 'old age' with the later stages of decline (Sawchuk, 1995, p.175). Such assumptions are exaggerated by the emphasis placed on youth by marketing and advertising. This emphasis has a detrimental effect on consumers post fifty, whose images are often denigrated to reinforce the implied opposition between old age and the associated positive attributes of youth (Lloyd Jones, 1991, p.228).

The third danger to design for an ageing population is when the model is combined with analysis of the relationship between perceptions of product value and purchase frequency, where high frequency purchases represent low consumer value (Douglas, 1996). The early adopters are associated with high value innovation and design, whilst the largest area of sales are associated with low value, high frequency products for the mass market.

If these three misconceptions combine consumers post fifty are associated with an inflexible model of innovation, where they are considered at best against mass market products and at worse against declining product life cycles and negative perceptions of the end of life, decline matches decline visually located on the downward path of the model. Distanced from notions of innovation and added value design and marketing, effectively trapped within a negative cycle of self-fulfilling prophecies. Consumers post fifty are perceived as purchasing products within the saturated, low value, high frequency bargain-basement end of the cycle, reinforcing negative assumptions of ageing exaggerated by advertising and marketing.

To break this cycle and adjust to recognition of the ageing population relies on changing perceptions, which is difficult when they are so long held and when this is perceived to entail such high risk. In design terms a 'wicked problem'. However, Cross's description of creative design offers a process where the resolution of conflicts come from a move: *'to a new solution space'* (Cross, 1990, p.427), by identifying an apposite approach. Each limitation is overcome by reconsidering the purpose of the theory to model

diffusion of innovation through the population, and to use the power of the model in popular currency to continue to reduce perceptions of risk and establish a sense of order and value within the ageing consumer market.

Firstly, by considering the potential of creating a longer mature phase of product sales from repeat orders from satisfied consumers. As increasingly 'the consumer' will be over fifty, the market will have to meet their demands to establish a loyal customer base within the ageing population.

Secondly, accept the association with the life cycle analogy but update perceptions based on positive predictions of extended expectations of life, where maturity extends to form a plateau of healthy later years followed by a reduced period of decline, reflecting: *'the compression of mortality'* (Laslett, 1996, p.75).

Thirdly, reconsider the purchasing behaviour of consumers post fifty against the value of products and their purchase frequency. Consumers post fifty, with established lifestyles, are likely to have accumulated all the low value high frequency products necessary for day to day living but have the financial ability to access high value low frequency products for themselves, or as gifts. High value products often incorporate innovation and high design and manufacturing qualities. These consumers have the capital to shift perceptions, whilst maintaining the value of the model to reduce the perception of risk to industry by revealing the potential of 'unknown consumers'. An age neutral design approach elongates product life cycles by appealing to a greater range of consumers, creating greater profits, within a beneficial cycle.

To realise the potential of an ageing population, positive perceptions must be created within the consumer, designer and producer. In a new environment, it is insufficient to identify the economic potential and ethical imperative of the ageing population. To reverse the damaging economic, social and personal effects to health from negative social and self-perceptions (Levy, 2002), we have *'to 'see' a new idea we have first to imagine or speculate'* (de Bono, 1994, p.119) a new scenario. Designers have particular talents in this area, in their ability *'to imagine new scenarios'* ... [and create] *'experimental artefacts'* (Rust, 2004) to communicate

innovative visions. Once imagined by a few, if the idea is to spread and diffuse through the population it is vital to have efficient forms of communication. In the visually rich contemporary context multiple images are used by advertising and marketing to communicate to mass audiences. So that today *'a lot of design is consumed as images rather than as a physicality'* (Hetch, 2010, p.8). Positive images have the power to reassure and reinforce positive concepts for an ageing population.

### 2.4.4 IMAGES OF AGEING

Advertising and marketing mediate the needs of production and the desires of consumption and contribute to perceptions of what constitutes the *'most advanced and yet acceptable'* (Loewy, 1979, p.231) products. Market research developed to offset perceptions of market saturation and: *'to provide business with manageable and controllable consumer markets'* (Brierley, 1995, p.40). Classification systems identified target groups of consumers by analysing past behaviour, access to finance and social allegiances to predict and manage responses. Market research not only categorised consumers into simplified 'types' but exaggerated and legitimised existing social stereotypes to support their classifications. Building on existing assumptions enhanced the persuasive power of the message. Modern mass media advertising developed to service industrialisation by utilising market information to inform cultural assumptions and thus the decisions individuals make.

In advertising and design, complex meanings are simplified using images to characterise ideas and enable the viewer to rapidly 'read' their meaning. *'Visual information is the quickest and most effective way to communicate ideas and themes to a range of different audiences'* (Porter et al, 2005, p.5). Over time, as messages diffuse through the population, these characteristics evolve into stereotypes. Although the messages stereotypical images portray can be inaccurate, or outdated, they retain their power from wide spread understanding within the population. The simplicity of images and the relationships they portray rely on this prior knowledge and shared assumptions of the 'language' of advertising and design. Images based on Western ideals of youth and beauty are

emphasised and manipulated to excess, often reinforced by negative stereotypes of ageing.

In advertising associated with the over fifties the distance between the consumer and the image may be emphasised by the language used. As many marketing people are relatively young the use of language may be understandable but not defendable (Metz and Underwood, 2005, p.74). 'Us and them' terminology familiar through descriptions of the 'aged', often accompanying requests for help, for example, Help the Aged posters have featured frail old ladies pleading for our help as: *'they need it desperately'* (Help the Aged, 1976). Using words and pictures to convey distance reinforces perceptions of those past fifty as: *'invisible consumers'* (Buck, 1990, p.104). So long as 'they' are not 'us', we remain safely distanced and in the process drawn into a guilty complicity as: *'It is the potential for words to become emotive that represents the power of language'* (Bytheway, 1995, p.72). Inclusive Design activists Patti Moore (2005, p.3) and John Clarkson (2009, p.8) have both commented on the power of language to perpetuate age based prejudice.

As Featherstone observes, perceptions of later life tend to fall into:

> *'two sets of images. In the first place there are the 'heroes of ageing', those who adopt a positive attitude towards the ageing process and ... the second refers to those individuals who experience severe bodily decline'* (Featherstone, 1995, p.227).

However, each view is as questionable as the other, as both portray the extremes of ageing. Stereotypes such as these are removed from perceptions of day to day reality, reducing the opportunity for consumers to empathise with the images. This lack of empathy is not restricted to the young but extends to consumers post fifty, as they too are unable to recognise advertising images of ageing. Turner argues that: *'the crucial sociological issue in the ageing process is the contradictory relationship between the subjective sense of inner youthfulness and an exterior process of biological ageing'* (Turner, 1995, p.258). By incorporating dubious social values, products and advertising emphasise this contradiction.

As consumers post fifty compare themselves to advertising images, they experience conflicting emotions from images presented as either too

perfect, or too awful to identify with personal perceptions of self. So much so that even when products are praised for including inclusive principles marketing rarely draws attention to these benefits in these terms. For example, Ford's Focus car is a case in point. Extensively designed using inclusive principles the marketing makes no mention of inclusive design because apparently there is a *'truism in the motor trade: 'You can sell an young man's car to an old man, but you can't sell an old man's car to a young man. ... You can't even sell an old man's car to an old man!'* (Metz and Underwood, 2005, p.77).

As social beings there is a strong inclination to conform to social expectations. Often future *'scenarios extend pre-existent reality into the future and so reinforce the status quo rather than challenging it'* (Dunne and Raby, 2001, p.268). Whilst contemporary advertising emphasises visual images of products, attempts at social control via the possession of products has a long tradition; from sumptuary laws and dress codes (Laver, 1969), to guides on good taste (Knight, 1808, Bully, 1933), and state intervention via the Utility Scheme established in 1942 (Woodham, 1997, p.118), or more contemporary support for the car industry and environmental concerns by government sponsored scrappage schemes (Directgov, 2009).

Advertising provides a link between consumer aspirations and manufactured products, by simultaneously producing and consuming images of: *'the market as it manufactures need'* (Fry, 1992, p.44). Undoubtedly, advertising influences cultural perceptions, if for no other reasons than we perceive it to do so, and confirm this perception by legislation and advertising standards. Judith Williamson believes: *'advertisements are one of the most important cultural factors moulding and reflecting our life today'* (1978, p.11). The extent to which advertising creates or reflects attitudes and prejudice is debatable (Brierley, 1995, p.143), but in a culture dominated by images of idealised youth it is not surprising that: *'much of what happens to ageing individuals is determined by circumstances, not principally biological constraints but social ones'* (Coleman, 1997, p.4). Advertising and design contribute to these social constraints, often without understanding that: *'old age is a cultural concept'* (Bytheway, 1995, p.119). Concepts change and

the same processes can be used to prompt a cultural shift to positive perceptions of ageing within the industrialised consumer society.

### 2.4.5 INDUSTRIALISATION

Whilst advertising, design and ageing developed in parallel, the underlying driver for each was the expansion of industrialisation. Developments within the industrial system prompted and then sustained long-term social change and utilised design and advertising to legitimate the process within the consumer environment:

> *'The interest in the meaning of ageing in the early part of the twentieth century had not sprung merely from idle curiosity. It was related to questions about the limits of usefulness and efficiency on the job that had arisen with industrialisation and to the movement for providing social insurance for the aged'* (Hareven, 1995, p.120).

In other words, interest in ageing was prompted by expectations of increased costs to industry and through provision for social insurance. When work became separated from the home, the perceived value of work at home in relation to work outside the home influenced who did what and when (Boxshall, 1997). Those too old to work outside the home represented a potential liability to industry and society. Even today the fear of economic burden drives much of the discussion around age discrimination in the United Kingdom, where it is recognised that *'Britain needs their skills and experience to sustain their health and activity for as long as possible'* (Walker, 2009, p.12). Historically, attitudes to ageing changed due to a combination of urbanisation and industrialisation, linked to increased expectations of life and a decline in fertility. These elements provide the background to long-term denigration of old age within an idealised promotion of youth culture.

Industrially sponsored social hierarchies, informed by theoretical models of rationalised consumer behaviour, attempt to manage the market, whilst marketing and advertising reinforces the process. Production follows the rational principles of economics, whilst consumers aim to satisfy a combination of personal preferences and socially constructed values within practical limitations. Douglas and Isherwood suggest that as individuals attempt to make sense of their increasingly complex world and numerous

conflicting sources of information: *'consumption is a rational way of trying to control an expanding information system'* (Douglas, 1996, p.132). Goods as information fill the social space between production and consumption. Products are given meaning by consumers who asses and are assessed within society by possession of these products, as they reflect social constructions of taste (Bayley 1991). Consumer products saturate the market in an attempt to satisfy the complexity of the consumer context and numerous individual constructions of need:

> *'there is a roughly inverse relationship between the frequency of use of objects and the value of the marking services that they confer. ... The cultural aspect of necessities is revealed as their service in low-esteem, high-frequency events, while luxuries tend to serve essentially low-frequency events that are highly esteemed'* (Douglas, 1996, p.83).

High frequency, low value purchases imply less risk to the consumer and producer because of the ease of replacement, whilst low frequency, high value purchases increase the perception of risk. However, perceptions of value are dependent on more than price alone. Advertising and marketing aim to add value to products by association with other products, or people with recognised value. High frequency global products such as Coca-Cola, with significant advertising budgets acquire added value from lifestyle associations created by the brand. The paradox for the consumer is that they have least power to affect the producer, the less often they are perceived to purchase products. For example: *'Most speculative house builders and many furnishers and home-arrangers see themselves as responding to what is expected of them; this is generally a guise for reducing risk'* (Putnam, 1999, p.207). As a result the consumer has least choice when selecting their highest value purchases and less still if, as with those post fifty, they are perceived as disinterested, disinclined, or unable to purchase frequently.

Within a consumerist society, consumers may appreciate the security and reduced risk of rejection from accidental large-scale deviations from the norm, and ironically when freedom to choose is valued, be grateful that industry and design limits their choices. The consequences of this perception of risk, is a high degree of resistance to innovation and change. Industry and design could prompt a positive reassessment of consumers post fifty by promoting age neutral design, advertising and

marketing. Using economic and marketing models to redefine the perception of risk, industry and design could contribute to a shift in societal attitudes to a positive perception of ageing. Ultimately, for design and: *'Marketing activities, if they are to be very successful over the long term, must match consumers' needs with commercial products and services'* (Rogers, 1995, p.79). In an ageing population it should be inevitable that consumer needs include the product preferences of those post fifty if they are to be successful over the long-term.

## 2.5.1 CONNECTING ISSUES

Increased expectations of life offer positive opportunities for the UK population. However, fear of the accumulation of age related illness has linked perceptions of ageing to disability and with the anticipated cost to society, has contributed to negative stereotypes of those post fifty. Negative perceptions shape attitudes to ageing and these attitudes have the power to significantly reduce expectations of life (Levy, 2002). If designers primarily associate ageing with physical decline they will inadvertently concentrate on these criteria, to the detriment of the emotional functionality and pleasure derived from products beyond basic usability (Green, 2002). As Patti Moore observed: *'we've become so fixed on the future quantity of elderly people that we've forgotten about quality. ... Design gives people choice. It defines who we are'* (Moore, 1999, p.61).

The review of design for an ageing population found evidence of formative periods from music and economics, psychology and physiology, whilst anecdotal evidence from designers suggested decisions are often based on an assumption that preference is associated with these periods (Seymour, 1993, p.114). Whilst design research by McNally identified the importance of recognising the: *'psychological and aesthetic needs of the users'* (1996, p.86) within the design process, and a preference in later life for the product forms associated with late adolescence, supported the hypothesis of formative periods for visual preference. The investigation proposed that formative periods for visual preference emerged from an association between intense emotional experiences in early life and a memory of the product forms associated with those experiences. As we attempt to recapture, or avoid the emotional experiences of our formative periods we

are drawn to the product forms associated with these moments. Such is the emotional power of these formative periods that this 'preference' remains potent through life.

For younger designers who have different life experiences the concept of formative periods for visual preference offers a range of visual references to overcome negative associations and positively address the emotional design needs of the ageing population. However, analysis of the design process revealed that negative assumptions of ageing were compounded by perceptions of the design process in three significant areas.

- Firstly, design is often perceived as principally a process of problem solving (Cross, 1984, p. 105) from a synthesis of what is known: *'the designers very first conceptualisations and representations of the problem and solution are, therefore, critical to the procedures that will follow'* (Cross, 1990, p.129, 130). If 'ageing' represents the 'problem' to be solved, those characteristics that are analysed in relation to the 'problem' are prioritised, moving the focus to the associated disabling effects of ageing and prompting quasi-medical responses (Barber, 1996, Pullin, 2009, p.2).
- Secondly, designers often rely on an intuitive ability to empathise with consumer needs, limiting design responses to a personal range of experiences. Designing for consumers post fifty requires extending this range of experience to explore alternative perceptions of preference, challenging the intuitive critical framework from which designers make decisions.
- Thirdly, the design process is often: *'based on the idea of individual genius or artistic imagination [and] involves the externalisation of internalised images. This involves a priori ideas and images'* (Friedman, 2002, p.11). If younger designers prioritise their perceptions of 'need', whilst relying on negative *'a priori images'* of consumers post fifty, the emotional functionality of the products designed will be insensitive to consumer preferences.

Essentially, the design process problematises scenarios and relies on the intuitive responses of the designer, supported by imaginative insights derived from personal perceptions of priorities and experience. This process operates within a context where economic models of rational

consumers are appropriated to provide simplistic marketing models, designed to reduce perceptions of risk to industry, which are visualised and reinforced by advertising using unrealistic images of ageing.

In combination these issues question the assumption that visual preference changes as a result of the physical: *'decline in a considerable range of capacities'* (Laslett, 1998, p.90) and therefore, that 'age' defines preference. Particularly as *'increasing longevity is accompanied by increasing disability free life expectancy'* (Walker, 2009, p.12), such that age is increasingly irrelevant as a targeting tool (Metz and Underwood, 2005, p.60). This investigation proposed that product forms associated with intense emotional experiences in early life guide preference in later life and that the association is with the style of the time, rather than any assumed disability related to age, where 'older' consumers are assumed to prefer a quasi-medical aesthetic.

Given the choice of emotionally sensitive design, the move to an ageing population offers positive social and economic opportunities by challenging the status quo of the design process, against a broader range of consumers, who may desire an alternative to youth orientated design solutions. This investigation questioned whether an age neutral approach (Foresight, 2000), focusing on the potential of product forms to stimulate positive emotional responses for a wider range of end users (Keates and Clarkson, 2003) offers a positive alternative?

To address this question the investigation reviewed the contradictions of an ageing population and traced traditional concepts of ageing from the Industrial Revolution, where increased wealth was reflected in a gradual increase in expectations of life. Negative attitudes to ageing established during this period, which considered ageing as a disease, remain potent today even when increased life expectancy has been matched by an increasingly disability free reality (Section 2.1). Within this context the power of social attitudes and the concept of formative periods to influence individual actions were considered. Whilst preference may be multi-causal, a proportion of preference may be associated with formative periods later expressed as intuitive choices. A range of evidence from physiological and psychological development illustrated the potential for individual

experiences and social expectations to inform and moderated perceptions of preference through time (Section 2.2). These influences inform the designers, where concepts of design problems influence thinking and the actions that follow. In order to design for an ageing population designers require a critically reflective approach to firstly challenge assumptions, imagine new scenarios and alternative responses (Section 2.3). And secondly, create products that offer a positive opportunity within an industrialised context for consumers who rationalise their purchases to satisfy functional and emotional utility, as social sensitive individuals (Section 2.4). An ageing population requires design responses where innovation offers a positive alternative to a wider range of users irrespective of their age.

The review referenced a wide range of literature to investigate the origins of attitudes in design and the ageing population of the UK. In this process it became clear that although there is a cultural lag in attitudes to ageing, contemporary perceptions can change rapidly. For these references to remain relevant they had to be tested for their validity within the professional design and consumer context. The investigation required methods to test assumptions from the literature and identify information considered relevant to design. Specifically, attitudes within design in relation to the role of visual preference, the validity of the concept of formative periods, attitudes to consumers post fifty and of a design tool to address the needs of this segment of the population. And for consumers post fifty, would a visual questionnaire be interesting enough to be completed, or accurate enough to define a formative period if it exists? Together these issues focused the parameters for the methodology and linked the review of the literature to the reality of design for an ageing population.

# CHAPTER 3 – METHODOLOGY

This chapter is a discussion of the reasons for choosing two different survey methods, interviews with designers (section 3.1) and a visual questionnaire for consumers post fifty (section 3.2). The implications of using mixed methods are then considered in relation to the structure of the thesis (section 3.3). The methods used are further discussed in subsequent chapters, chapter 4 interviews with designers and chapter 5 on the visual questionnaire for people aged over fifty. Each of these chapters includes brief notes on the implementation of the surveys together with details of the findings and initial discussions. Within these parameters the methods had to:

- test whether the opinions of design professionals confirmed the negative assumptions associated with attitudes to ageing identified within the literature,
- develop the use of visual images in quantitative questionnaire methods,
- design the questionnaire to identify if there was an association between the age of the respondents and their visual preferences reflecting a formative period,
- so that the findings provide a positive contribution to the design process for design for an ageing population when incorporated in a design tool.

Essentially the methods had to address designers and consumers post fifty in ways appropriate and sensitive to their characteristics and provide feedback from which to inform design for an ageing population. As perceptions of ageing and visual preference are subjective, for the findings to be valued it was important to incorporate qualitative questions asked to a sample of sufficient size to be considered quantitatively reliable within the survey methods selected. To support this approach, whilst proposing an innovative contribution to questionnaire methods, each survey technique had to express reliability, in that it was: *'consistent in what it measures'* (Thomas, 1978, p.7) and validity: *'it measures what we actually want it to measure'* (Thomas, 1978, p.7). To achieve these aims the specific characteristics of the survey samples, the design of the questions asked and the pilot process were considered.

### 3.1.1 INTERVIEWS WITH DESIGNERS

The creative industries contribute £60 billion a year to the UK economy, or 7.3%, and have grown at twice the rate of the economy over the past decade, employing two million people (DCMS, 2008, p.6). Thirty two percent of the creative workforce within culture, media and sport are based in London (797,000) and fifty eight percent in the South East, including London, accounting for nearly one London job in every twelve (GLA Economics, 2009, p.4). The professional characteristics of design, generally small scale of business and geographical clustering suggested a small sample would be representative of the profession.

The design profession is largely personality led and uses specialist, discipline specific terminology. Using an interview survey provided in-depth questioning with pre-selected leading design professionals and continued until the responses showed a convergence of data, from which conclusions were drawn (Chapter 4). Using semi-structured interviews refined the technique to achieve consistency and allowed comparison between responses (Wragg, 1978, p.10). The qualitative responses provided professional perspectives to compare against the literature on design and the findings of the visual questionnaire for consumers post fifty (Chapter 5), whilst anticipating issues related to proposing a critically reflective approach for design for an ageing population (Chapter 6).

The interview survey had to be sensitive to the attitudes of influential design professionals, in sufficient depth to interrogate the key issues and sustained until the responses identified a consensus of opinion, or sufficient diversity of opinion so that it was clear that consensus was not possible. A semi-structured survey was selected to allow comparison and consistency between interviews, ensure efficient use of the designer's time without constraining their responses, whilst recognising any additional issues not anticipated by the investigation. A flexible method allowed exploration of the attitudes and beliefs of the designers whilst clarifying issues to inform the following, fixed method, visual questionnaire. To test these assumptions and allow comparison between the responses a series of questions was designed to define a semi-structured interview schedule.

### 3.1.2 DEFINING THE INTERVIEW QUESTIONS

Having completed the review of the literature on design for an ageing population a list of questions associated with the issues identified was collated, categorised and edited around key issues. Anticipating that the designers time was valuable a time frame of thirty to forty five minutes was proposed. This time frame limited the number of questions possible.

To achieve an efficient and effective interview, the question structure was designed to identify: *'relevant information, that contains no redundant items and eliminates questioner bias'* (Wragg, 1978, p.13). Within these aims, Robson recommends a structure that includes: introductory comments (probably a verbatim script); a list of topic headings and possibly key questions to ask under these headings; a set of associated prompts; closing comments (Robson, 1993, p.238). These principles were followed with a formal introduction, followed by five sets of questions; each set focused on a different aspect of the investigation. The questions asked for 'basic information' about the interviewees, their 'perceptions of the consumer', the use of visual references and 'visual preferences' within the design process, and perceptions of design within the 'production process' to anticipate the value of the proposed design tool.

To establish a consistent approach to the interviews a brief standardised introductory text was proposed to foreground the questions that followed. Whilst the text provided a brief introduction and overview of the interview schedule care was taken not to bias the interviews by revealing that the focus of the questions related to consumer preference post fifty (figure 3).

**INTRODUCTION**

These questions form part of a PhD research project investigating the motivations behind consumer choices. The ultimate aim of the research is to propose a Design Tool to present the findings.

The purpose of this interview is to try to ascertain design variables and visual references pertinent to designers and the design process.

The questions fall into 5 brief categories and the whole interview should take no longer than thirty minutes.

There will be an opportunity to ask me questions at the end of the interview.

Figure 3: Introductory sequence for semi-structured interviews.

Following the introduction the first of the five sets of questions was addressed.

SECTION 1 – BASIC INFORMATION

The questions in 'Section 1 – Basic Information' (figure 4) identified the designers by their name and age. Although the sample was small, selecting a range of ages allowed comparison between the responses to see if attitudes were age related. The designers' discipline, company name and the number of designers employed provided information related to the potential influence of the designer within the company and their clients.

**Section 1. Basic Information** - about yourself.

1.1 Your name
1.2 Your age
1.3 Your design discipline
1.4 Your company name or employer
1.5 The number of designers employed by the organisation you work for
1.6 The ratio of male to female designers

Figure 4: Section 1 semi-structured interviews.

The selection of designers drew on personal recommendations from colleagues at Central Saint Martins College of Art and Design. The interview selection aimed to sample a range of ages and design disciplines. In identifying potential interviewees it became clear that there were more male than females interviewed. To check that the sample was representative of the design profession, a question was included that asked for the ratio of male to female designers at their work place. Although not the focus of the research, the disproportionate number of male to female designers had the potential to influence assumptions of need related to experience, in a similar manner to assumptions of age. In addressing issues of age other areas of imbalance between the design profession and the general population became evident, which although beyond the focus of this investigation were acknowledged for their potential influence within the sample.

Having established the personal details of the interviewees the questions considered the designers perceptions of the consumer.

SECTION 2 – PERCEPTIONS OF THE CONSUMER

Questions in Section 2 focused directly on the designer's perceptions of the consumer. To avoid biasing the responses the questions addressed general perceptions, through assumptions related to ageing and finally specific perceptions of older consumers, over fifty years (figure 5).

**Section 2. Your Perceptions of the consumer**

2.1 Who would you describe as the 'consumers' of your design work?
2.2 Do you have a pre-conceived ideal consumer in mind when you design?
If so, can you describe them?
If not, how do you formulate your perception of the consumer?
2.3 In ten-year cohorts, e.g. 10 - 20, 20 - 30 etc., estimate the three decades where consumer spending power may be highest.
2.4 In ten year cohorts, estimate the three decades where consumer interest in design may be at its highest.
2.5 Do you think peoples preferences are formed by a certain time in their life and if so when?
2.6 What is your perception of older consumers, over 50?

Figure 5: Section 2 semi-structured interviews.

To identify concepts of consumers within the design process Questions 2.1 and 2.2 asked for the designers general perceptions of the consumer and if they had a preconceived 'ideal' consumer how they formulated these perceptions. Questions 2.3 and 2.4 then started to address age related issues. Specifically the designers were asked to identify three age related decades in descending order of importance for consumer spending power and interest in design. Having established age related perceptions, the designers were asked if they thought peoples preferences were formed by a certain time in their life and if so when (question 2.5)? This question related directly to the hypothesis of formative periods for preference to allow the responses to be compared against secondary sources identified within the review of design for an ageing population (Chapter 2). Question 2.6 focused on ageing and specifically asked for: 'your perception of older consumers, over 50?' This identified the lower end of the focus of the investigation, defined as those aged between fifty and seventy-five years. By leaving this question to the end of the section, the earlier questions remained free from an awareness of the age specific focus of the investigation. However, whilst the earlier questions may have influenced the responses to the later questions, they also allowed the designers to amend or confirm their earlier assessments if they chose.

Questions to this point considered issues relating to perceptions of the consumer and ageing. The third set of questions focused on elements associated with the use of visual information used within the design process. The responses to these questions, in combination with the findings of the visual questionnaire, informed the design of the proposed design tool.

SECTION 3 – VISUAL REFERENCES

**Section 3. Visual references and additional design variables**

3.1 Which visual references do you draw on when researching a design brief? Can you give three examples?
3.2 What additional information might you find useful when assessing consumer needs?
3.3 At what age, might age itself, become a design consideration?
3.4 What considerations do you think might be relevant when designing for an ageing population?
3.5 Would you use any specific visual references if designing for an ageing pop.

Figure 6: Section 3 semi-structured interviews.

The questions in Section 3 (figure 6) aimed to identify the type of visual references used within the design process (question 3.1), and any additional information used to assess consumer needs (question 3.2). Specifically when 'age' became a design consideration (question 3.3), what were the relevant issues when designing for an ageing population (question 3.4) and were there any specific visual references considered for this scenario (question 3.5)? By specifying 'visual references' the questions looked beyond physically functional issues associated with age. If negative attitudes to ageing were found, this question tested whether these perceptions were so entrenched in the minds of the designers that their influence extended into the visual references consulted within the design process.

These questions considered how the perceptions identified in the earlier questions were translated into information and actions within the design process and anticipated use within the visual questionnaire and design tool.

SECTION 4 – THE PRODUCTION PROCESS

**Section 4. Design's position in the production process**

4.1 Who liases with the client in the majority of cases?
4.2 Who sets the design brief in the majority of cases?
4.3 In what form is the design brief given to the designer, verbal, written, other?
4.4 Grade 1 - 5, 1 the highest, the importance of market research to your designing.
4.5 Grade 1 - 5, 1 the highest, the importance of trends / fashion to your designing.
4.6 Who forms the majority of your clients?
Retailers, Manufacturers, Design Companies, Other?
4.7 In what form would you ordinarily present designs to the client?
4.8 Would you include additional information with the designs to support them?

Figure 7: Section 4 semi-structured interviews.

If the investigation was to inform the design of the questionnaire and design tool, it had to work within the existing professional parameters and be sensitive to the differing professional perspectives between the designer and user. Section 4 (figure 7) focused on the designer's perceptions of the position of design within this process. Questions 4.1, 4.2 and 4.3 focused on the relationship with the client and the range of influential factors within the development of the design brief through the design process. Questions 4.4, 4.5 and 4.6 identified additional influential factors such as marketing and trends within the design process and the designers understanding of their importance. Questions 4.7 and 4.8 considered the process of negotiation with the client and methods of presentation used to communicate design solutions to understand how designers translated and defended their ideas. These later questions directly anticipated questions considering the role and value of the design tool.

SECTION 5 - THE DESIGN TOOL

In the previous sections the questions asked for perceptions of the consumer, the design process and the relationship with the client as representatives of the production process. As the investigation aimed to identify formative periods for visual preference, via a visual questionnaire and incorporate the findings into a predictive design tool to bridge the gap between younger designers and consumers post fifty, it was important to anticipate any reservations and incorporate suggestions. In Section 5 (figure 8) the designers were informed that the aim of the investigation was to propose a design tool to access the visual preferences of the over fifties. This aim was described to the designers and they were asked if they thought

the design tool might have value (question 5.1) and if so, at which point in the design process (question 5.2)? The designers were also asked if they agreed to be re-interviewed when the visual questionnaire data had been collated and the design tool proposed (question 5.3). This plan anticipated the design tool as a contribution to professional practice, where review and feedback from designers provided specific insights to its value.

**Section 5. The proposed Design Tool**

The ultimate aim of the research is to propose a Design Tool to access the visual preferences of the over fifty consumers and combine these with other information relevant to this age group, e.g. ergonomic, economic, geographic, relationships to other market sectors, etc.

5.1 Would a tool of this description be a useful design reference?
5.2 At which point might you foresee the proposed design tool being useful?
Overall company planning, Client meetings prior to setting the brief, Design meetings, Design research, Designing, Design evaluation, Client meetings in addition to design proposals, Other?
5.3 The next phase of the research is to conduct a large-scale questionnaire targeted at the over fifty consumer. When all the data has been collated and the design tool proposed may I re-interview you for your opinion at that stage?

Figure 8: Section 5 semi-structured interviews.

These interview questions were refined by using an established pilot process, which together with the analysis are described in Chapter 4.

### 3.2.1 CONSUMERS POST FIFTY

In the second survey an innovative visual questionnaire was designed to test the hypothesis of formative periods for visual preference. Prior to the design of the questionnaire three issues had to be considered. Firstly, the particular characteristics of the survey sample in relation to the general population of consumers post fifty. Secondly, the process of validating the sample within the terms of the investigation. Thirdly, the underlying elements on which the survey questions were based, interest in design, visual preference in relation to age and perceptions of value related to design. These issues structured the principles for the design of the visual questionnaire (section 3.2.2) and the details for each of the three sections, personal details (section 3.2.3), visual preference (section 3.2.4) and additional factors (section 3.2.5). A review of the pilot process within the design of the questionnaire is discussed in section 3.2.6.

In contrast to the relatively small scale of the design community, consumers post fifty are nationally distributed and constitute over thirty per cent of the adult population of the United Kingdom and *'nearly half the electorate'* (Nicholson, 2001, p.8, O.N.S., 2008). There are areas where consumers post fifty are high relative to the average population, for example Norfolk, the South West and South East of England and Wales (Sleight, 1990, p.127). However, whilst regional variations are important to local retail environments, visual preference is more likely to be related to consumer types rather than geographical locations. A randomly distributed survey was proposed to achieve a sample that was representative in terms of the research definition of consumers aged between 50 to 75 years and resident in the UK. A quantitative questionnaire provided the opportunity to survey many respondents in a relatively short time.

The University of the Third Age (U3A), as a national and growing association, was identified as offering a potentially appropriate respondent sample. Initially, the U3A were reluctant to become involved, the National Administrator Lin Jonas reflected that they were often approached by *'people doing research projects, and in most cases, for various reasons, ... do not co-operate'* (Personal interview, 15.06.1999). After a series of conversations, where the aims of the investigation were explained, Lin Jonas agreed to the participation of the U3A and to endorse the investigation. However, it was essential to respect the confidence of the respondents and the U3A as an organisation. Informed consent was discussed, a process of distribution and reply negotiated and a protocol agreed. To help establish trust between the investigation and the U3A an initial brief review of the investigation and later a more detailed review of progress were supplied for the U3A newsletter. In addition, it was agreed that individual respondents could also request a personal copy of the analysis. However, sending reminder messages or using follow up methods designed to increase response rates were not feasible as the University of the Third Age refused to allow their members to feel 'coerced' in any way.

The selection of members of the U3A skewed the sample from being representative of the UK population. However, the social and intellectual

pursuits, and financial status of the U3A were anticipated to be representative within the terms of the research and to have a potentially positive effect on the response rate. These assumptions were tested by postcode analysis of the respondents, which validated the U3A sample, as representative of the characteristics defined by the investigation. The postcode analysis provided a geodemographic, independent and objective external measure, which allowed each respondent to be cross-checked against their postcode reference, listed within: *'a database of 44 million individuals, each one selectable by 300 different lifestyle attributes'* (CACI, 1997, p.1). The postcode analysis provided an in-depth source for wide ranging lifestyle analysis.

Within these parameters the review of design for an ageing population (Chapter 2) defined five questions for the questionnaire:

1. Were consumers post fifty interested in design?
From the literature it was established that the over fifties had sufficient funds (Metz and Underwood, 2005, p.21) and spending habits (O.N.S., 2008, p.130) to represent a potentially lucrative market but this alone did not guarantee an interest in design.

2. Was there a difference in visual preference based on sex?
Although not the focus of the investigation, the product design profession is male dominated and this bias had to be considered against the sample population. If visual preference were differentiated by the sex of the respondents, a similar difference might occur in the designers attitudes. This has important implications for design for an ageing population because as the population ages it becomes more proportionately female. Any gender based bias in design responses will exaggerate these differences.

3. Was there an association between visual preference and age?
This question related directly to the aims of the investigation, to identify and specify formative periods for visual preference.

4. How important were visual preferences for design purchase decisions?
Whilst question 3 identified the degree of interest in design by consumers post fifty and associated this preference against particular periods of time,

there remained the question, how important did the respondents consider their visual preference in decisions to purchase products? This question was important because although conscious decisions to purchase may be rationalised against a range of considerations, such as price, place of manufacture, materials, etc., these reasons may be later, conscious rationalisations of deeper, unconscious processes. Consumers post fifty, as part of the social context, may consciously share the negative attitudes expressed by the designers and when asked if they were interested in design, may say no. The questionnaire went beyond these socialised responses to interrogate the more personal and individual intuitive visual preferences, which can be difficult to consciously express but nevertheless represent a powerful discriminator.

5. What other issues did U3A consumers consider important?
This question recognised there may be other important issues not considered by the investigation. It was important to offer an opportunity to express individual opinions in response to the questionnaire.

The characteristics of the sample, process of validation and these five questions provided the framework within which to design the questionnaire.

### 3.2.2 DESIGN OF THE VISUAL QUESTIONNAIRE

To test the hypothesis of formative periods for visual preference a combination of visual and text based questions was proposed to provide a comparison between alternative methods. A combination of methods tested the effectiveness of the innovatory visual element and reduced dependence on a text-based analysis alone. Using images had the advantage of encouraging empathy between respondents and designers by reference to shared visual information. Text based questions were vulnerable to differing interpretations between responses from consumers and the professional language used within design. In addition, text based responses reflected consciously considered attitudes to design, rather than intuitive preferences. As Oppenheim observes, attitudes in themselves may not guarantee behaviour but rather identify: *'a state of readiness, a tendency to respond in a certain manner when confronted with certain stimuli'* (Oppenheim, 1992, p.176). The questionnaire survey and analysis was: *'essentially fact finding and descriptive'* (Oppenheim,

1992, p.12), to identify an association, or *'state of readiness to respond'* between age and visual preference, rather than causality. As Oppenheim goes onto warn: *'when trying to disentangle problems of causality we often find associations or correlations, but of themselves these are no proof of causality'* (1992, p.14).

The investigation hypothesised that whilst preference may be multi-causal, a proportion of preference may be associated with formative experiences which are later expressed by intuitive choices. It was proposed that rapid expressions of preference reflect intuitive choices more accurately than asking for consciously considered preferences. Images were selected to represent a range of products whose forms reflected specific periods of time related to design styles. If patterns of preference were identified from the selection of images, which were linked to a specific period of time, the preferences may reflect formative periods in the respondent's life. If found, formative periods would provide a direct age related reference of emotionally sensitive and time specific design forms. Age related preferences would provide information from which designers could more accurately predict preference and re-establish empathy with the visual preferences of consumers post fifty.

It was proposed that a visual survey facilitated a transparent analysis of visual preference and enabled direct transfer of the findings and images as references into the design process. As with the interviews it was essential that the questionnaire should be both reliable and valid, in that it was: *'consistent in what it measures [and] it measures what we actually want it to measure'* (Thomas, 1978, p.7).

The use of visual images presented an element of innovation and a degree of risk from the selection of images. However, it was recognised that it can: *'make a lot of sense to combine strategies in an investigation'* (Robson, 1993, p.41). The investigation balanced the innovation of using visual images in combination with more established text-based questionnaire methods.

Whilst the use of visual images presented an element of innovation, it was not unprecedented. The use of visual stimuli had been used in projective techniques (indirect techniques) where there was an: *'often painful conflict*

*between the demands of objective, scientific method and rigour, on one hand, and the desire to get the fullest flavour of meaning and significance out of such self-revealing responses, on the other'* (Oppenheim, 1992, p.213).

In addition, Crozier reviewed the use of photographs in psychological studies into environmental and landscape preference (1994, p.16). Greenfield discussed the global recognition of facial responses to emotions identified by Paul Ekman (2000, p.107). Whilst Anjum described the development of a visual questionnaire for interior design, that supported text based questions and evaluated visual techniques to identify which were most effective for the target sample. Anjum suggested that: *'the design and the use of such a visual questionnaire were not traced to any literature on research methods for social and behavioural sciences'* (Anjum, 1998, p.38). Anjum discussed Oppenheim's observations but added: *'the idea of the visual questionnaire was unique and its approach is innovative'* (Anjum, 1998, p.39). The questionnaire used in this research was innovative as it differed from Anjum's work in three substantial areas:

- **Question Design -** Anjum's visuals supported text questions whilst this investigation offered visual images as the focus of the question.
- **Visual Images -** Anjum utilised computer generated images whilst this investigation used referenced photographs.
- **Focus of Research -** Anjum's questionnaire was developed for interior design whilst this investigation focused on interior environments and products to identify visual preference.

Distribution by the U3A with a postal return allowed individual responses to be made in private, free from peer group pressure in a social context (Bruseburg and McDonagh, 2010, p.3). Whilst the internet offered potential for questionnaire delivery, access to broad band varied and the tendency for older users to feel less confident with computers questioned the validity of a sample using this method (Age Concern, 2008, p.31). However, the rise of new media, internet and catalogue shopping have increased the familiarity of making design decisions based on visual images. Similarly, images are frequently referenced within the design process (section 4.2.4, question 3.1) and manipulated using computer technology (Kalviainen, 2005, p.1). Even so, the use of visual

questionnaires to identify consumer preferences remains limited. *'The visual has been undervalued in recent years in favour of user-centred design focusing on usability and interaction. Since user-centred design grew from usability research and not from visual art research'* (Kalviainen, 2005, p.1). Kalviainen goes on to emphasise the value of using visual images in design research into consumer preferences. *'Visual images and style are not only about aesthetics: people read deep meanings into the visual aspects of objects, and connect them with the values that they hold important'* (2005, p.1).

Having established the potential for innovation within questionnaire methods this investigation considered the design of the questionnaire. The five questions identified from the review of the literature were addressed within three sections; Section 1 – personal details of the respondent, Section 2 – visual preferences, and Section 3 – a text based question considering factors that influence decisions to purchase.

### 3.2.3 SECTION 1 – YOUR PERSONAL DETAILS

**Section 1** biographical details, confirming age, sex and postcode (figure 9). Responses to Section 1 of the questionnaire provided the variables for analysis of Sections 2 and 3 and data for external validation of the sample by postcode analysis. The category variables, of age and sex, were defined by the terms of the investigation, whilst the data available from the postcode analysis reduced questions that might be considered intrusive to a minimum. Sensitivity to the privacy of the respondents was important for the co-operation of the U3A. The sample was validated internally by using each age category as a control group against which to compare the results of the other age groups and externally by post code analysis.

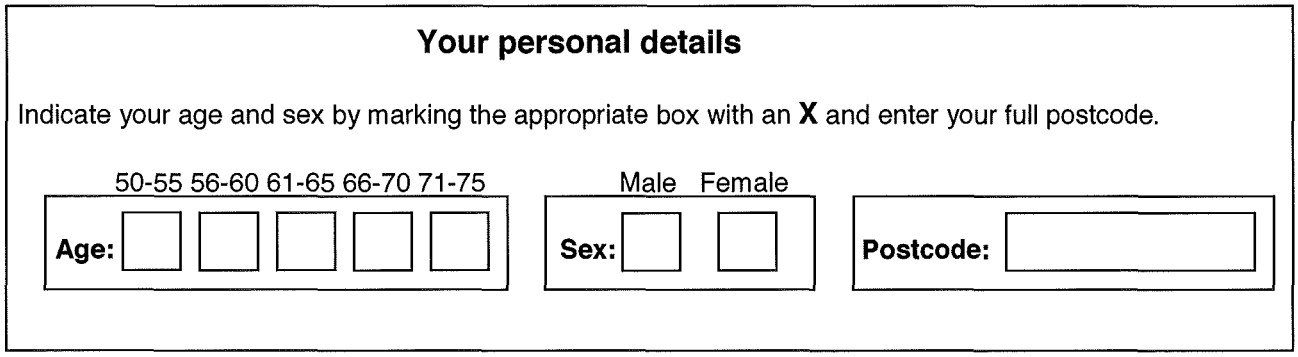



Figure 9: Section 1 of the Visual Questionnaire

- **AGE** was identified by five non-overlapping categories evenly distributed from fifty to seventy five years, sub dividing the age group identified by the investigation. Each age category identified separate samples to provide control groups within the analysis.
- **SEX** based preference was not the primary interest of the investigation. This category was included to facilitate consideration of differences within each age group and in the event of gender emerging as a differentiating factor, to make recommendations for further investigations.
- **POSTCODE** analysis was selected for its recognised value within the professional design community and to verify the respondent sample as an accurate reflection of the investigation criteria. The range of elements within the postcode analysis offered a: *'database of 44 million individuals, each one selectable by 300 different lifestyle attributes'* (CACI, 1997, p.1) and had potential for subsequent investigation after the initial investigation.

The questionnaire asked U3A consumers for their visual design preferences and attitudes to design factors that influence decisions to purchase. The postcode analysis provided additional professionally recognised information on consumer spending and lifestyle behaviour relevant within the design process. Distribution of the questionnaire via the U3A organisation validated the sample by age and residential status within the U.K. U3A membership had been assumed to imply a degree of economic status but for the findings to be validated this assumption had to be confirmed. The postcode survey aimed to:

- validate the U3A sample identified within the visual questionnaire as an accurate reflection of the investigation parameters: consumers aged between fifty and seventy five years, resident within the U.K. and financially independent,
- satisfy the anticipated preference of designers for the sample to be validated by a quantifiable system, recognised within manufacturing and marketing. Question 4.4 in the interviews with designers would test this assumption, and

- provide a source of detailed consumer purchase information relevant to the design process.

Ms. Ellen Bone, Project Director at CACI Information Services kindly agreed to provide the postcode analysis for the investigation sample. CACI Information Services developed the 'ACORN' geodemographic categorisation system which:

> *'combines geography with demographics - places where people live with their underlying characteristics - to create a tool for understanding different types of people in different areas throughout Great Britain'* (CACI, 1997, p.2).
>
> *'The ACORN classification is built entirely using Census data from the 1991 Census. As many as 79 different data items, carefully screened from some 9,000 items produced by the Census authorities for each of the 150,000 small geographical areas covering Britain, are incorporated in the ACORN classification. This means that all the significant factors - such as age, sex, marital status, occupation, economic position, education, home ownership and car ownership - are covered to give a very full and comprehensive picture of socio-economic status'* (CACI, 1997, p.4).

For the postcode analysis to be valid a sample of 2,000 responses was required. Professor Harvey, the Director of the Centre of Research into Quality at the University of Birmingham, advised that average response rates for postal questionnaires were notoriously low, with 20% response considered extremely high (personal communication, 19.04.1999). Whilst Dr. Nayak, of the Centre of Applied Gerontology at the University of Birmingham, added 30% was almost unheard of, unless the questionnaire respondents were drawn from an existing bank of volunteers such as the 1,000 Elder Group at Birmingham (personal communication, 20.04.1999). As the postcode analysis required at least 2,000 responses this option was not considered viable.

The maximum survey possible, within the limitations of the investigations budget, was 5,000. 2,000 responses represented a 40% per cent response rate, which was extremely ambitious, particularly as consent for further prompts or reminders had been withheld. Whilst this scale of

sample would overcome any deficiencies or spoilage in the responses, it had implications for the design of the questionnaire and response form. Once these issues had been addressed the actual response rate achieved was 55%, or 2,772 responses (section 5.1.1).

The response rate required for the postcode analysis was in excess of 40%, or 2,000 from a 5,000 mailing, posed significant issues for data entry and collation, which became clear within the pilot process (section 3.2.6). Utilising computer scanning technology offered a rapid retrieval facility combined with automatic data transfer into pre-selected computer analysis systems. The postcode analysis provided independent verification of the sample and allowed the focus of the questionnaire to remain with the design issues of the study.

### 3.2.4 SECTION 2 – VISUAL PREFERENCE

Section 2 identified individual design preferences by selection from a range of product images. Whilst the issues identified a framework from which to design the questionnaire, an initial review of the literature (Oppenheim, 1992, Robson, 1993, Youngman, 1982) and of questionnaires collected for comparison, confirmed that a visual questionnaire represented an innovative addition to questionnaire methods. Without an established method to reference, the investigation focused on the five questions arising from the literature relating to design for an ageing population as the basis from which to design the questionnaire. Whilst the parameters of seventy years of design were defined by the period of time experienced through the lives of the respondents, the selection of product images and the design of the question had to be defined.

IMAGE SELECTION

An extensive list of products was identified to initiate the search for suitable images. A sufficient range of products was required to be considered representative of preference. Each product category required seven variations, each stylistically representative of a decade from the 1930s to the 1990s, the period experienced by the respondents.

The search began by reference to museum collections and design books, both contemporary and historical, in a range of specialist libraries, from the University of the Arts London (formerly the London Institute), the University of Brighton and the Victoria and Albert Museum. Although this selection found many artefacts and images, the sources of ownership and publication, and quality of images available varied significantly and made defining any consistent collection parameters impossible.

Magazines that had been consistently published throughout the seventy-year period were also identified. For example, Punch, Vogue, Country Life, Woman's Weekly, Ideal Homes, Good Housekeeping, Woman's Own and Woman. Access to collections was via libraries and publishers archives and raised two significant issues. Firstly to identify the magazine readership and check that these represented similar values as those of the questionnaire sample, in order that the products featured were an appropriate selection. And secondly, that they contained a sufficient range of usable product images. Although individual magazines provided consistent publishing criteria, the range of products featured and the quality of the images was limited.

Consistency was important as it allowed comparison between criteria, such as colour or black and white images, single or multiple products arranged in a setting. If the differences between images, or the products they portrayed, were too great it would be an unfair comparison. By focusing on consistency within publishers and comparison between images and product forms, across seven decades, the Design Council Archive at the University of Brighton was identified as offering a significant source of suitable images.

The Council of Industrial Design was founded in 1944 and in 1972 became what is now known as the Design Council. The archive contains over three thousand images of products and room settings from throughout the twentieth century. This collection provided an extensive range of images to form the basis of the visual questionnaire. Additional images were added to create a fuller range of products from which to select the final categories. Only by seeing the images together could an overall assessment of the representative nature of the collection be

made. Using this range of images overcame the potential limitations of relying on modern photographic techniques that would have produced high quality images but were vulnerable to the dangers of imposing contemporary judgements on historic criteria.

Having reviewed many different forms of archived images, from picture books, interior design magazines and academic texts to collections in museums or by public bodies, it became clear that the availability of images and the products they reflected rarely existed by chance alone. Rather, they were the product of care and attention by individuals, companies or organisations with particular interest in maintaining them. These individual histories had to be considered for their influence on the availability of the images and any implications that might extend into the selection by the respondents. For example, Jonathan Woodham observes, those artefacts selected as worthy of collection by institutions tend *'to dominate historical perceptions'* (1997, p.9). Prioritising the Design Council Archive, as the primary source for images, provided a consistent source whose representative nature worked well with the additional issues considered in the selection. As in addition to assessing the source of the images and their comparability across seven decades, the investigation also considered the impact of consumers knowledge of products and the presentation of images within the questionnaire. The emphasis was on the visual appearance of the products and so the images selected represented:

- products which maintained a consistent function through time, for example all the watches were analogue, rather than including digital examples to represent the later years.
- the products selected subtly represented particular decades in design, but were intentionally familiar to, or still available within the contemporary context,
- the products were potentially slightly aspirational to the respondents, to reduce the influence of prior practical knowledge of the product, and had
- consistent visual characteristics of format, content and colour, to avoid perceptions based on the quality of the image.

Having collected a large range of product and interior images, where each category had at least one image for each of the seven decades, a final selection was chosen by a panel of design experts at Central Saint Martins College of Art and Design. The final selection was made by reviewing all the images and assessing their quality within the parameters of the investigation. Two categories, wall paper and pens were rejected and the final collection of fourteen interior and product categories was refined and confirmed as representative of the time, product and quality of image. The products were selected against the decade for which they were associated within the consumer context. The production process and time taken for these designs to become popular consumer products varied across the range. Each product image was representative of a single decade, from the 1930s to the 1990s, the period of time experienced by the respondents. Together, the fourteen product and interior categories provided a representative overview of the design decades defined (figures 10 - 16, Design Decades 1930 - 1990).

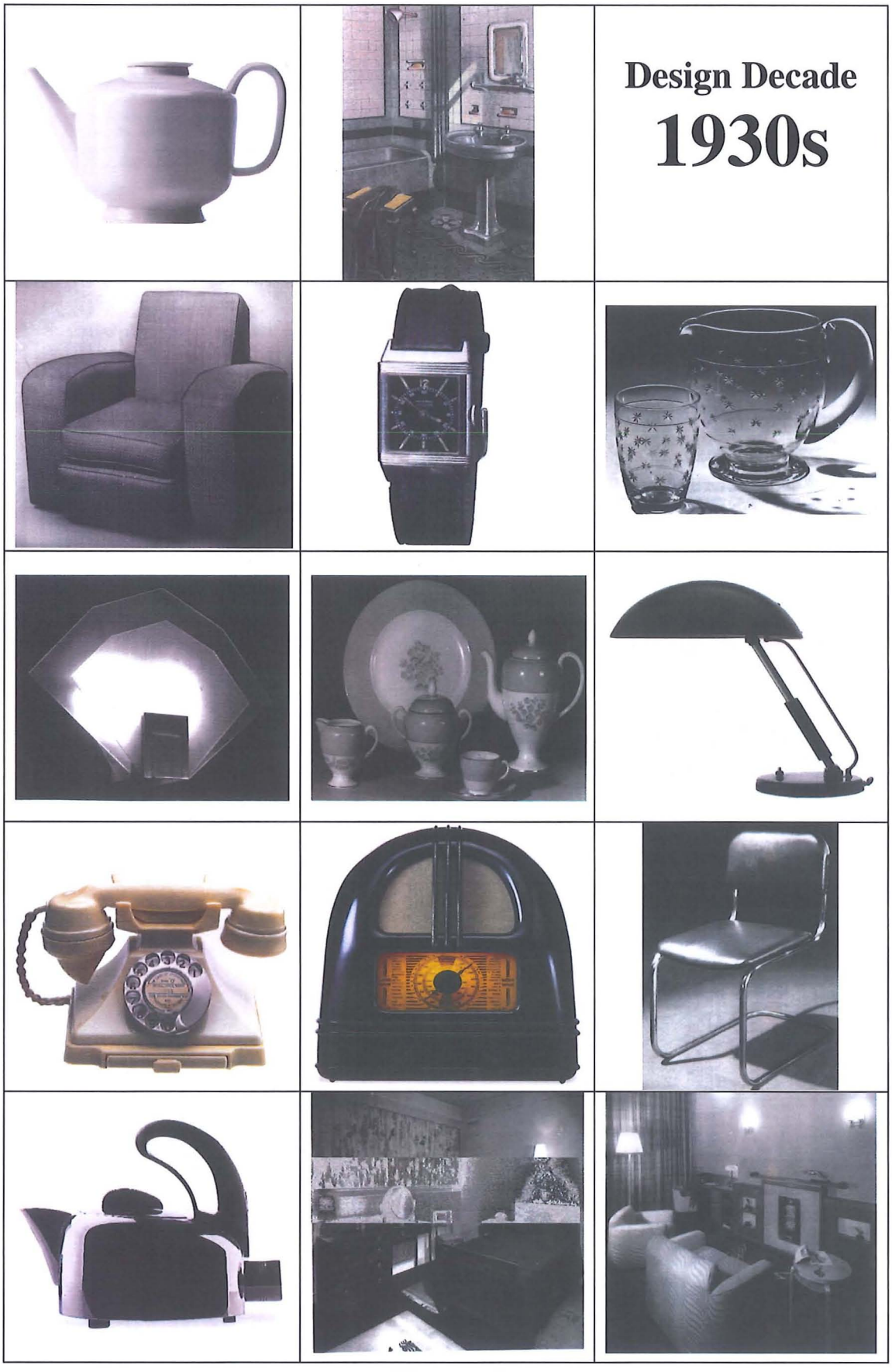



Figure 10, Design Decade Images1930s

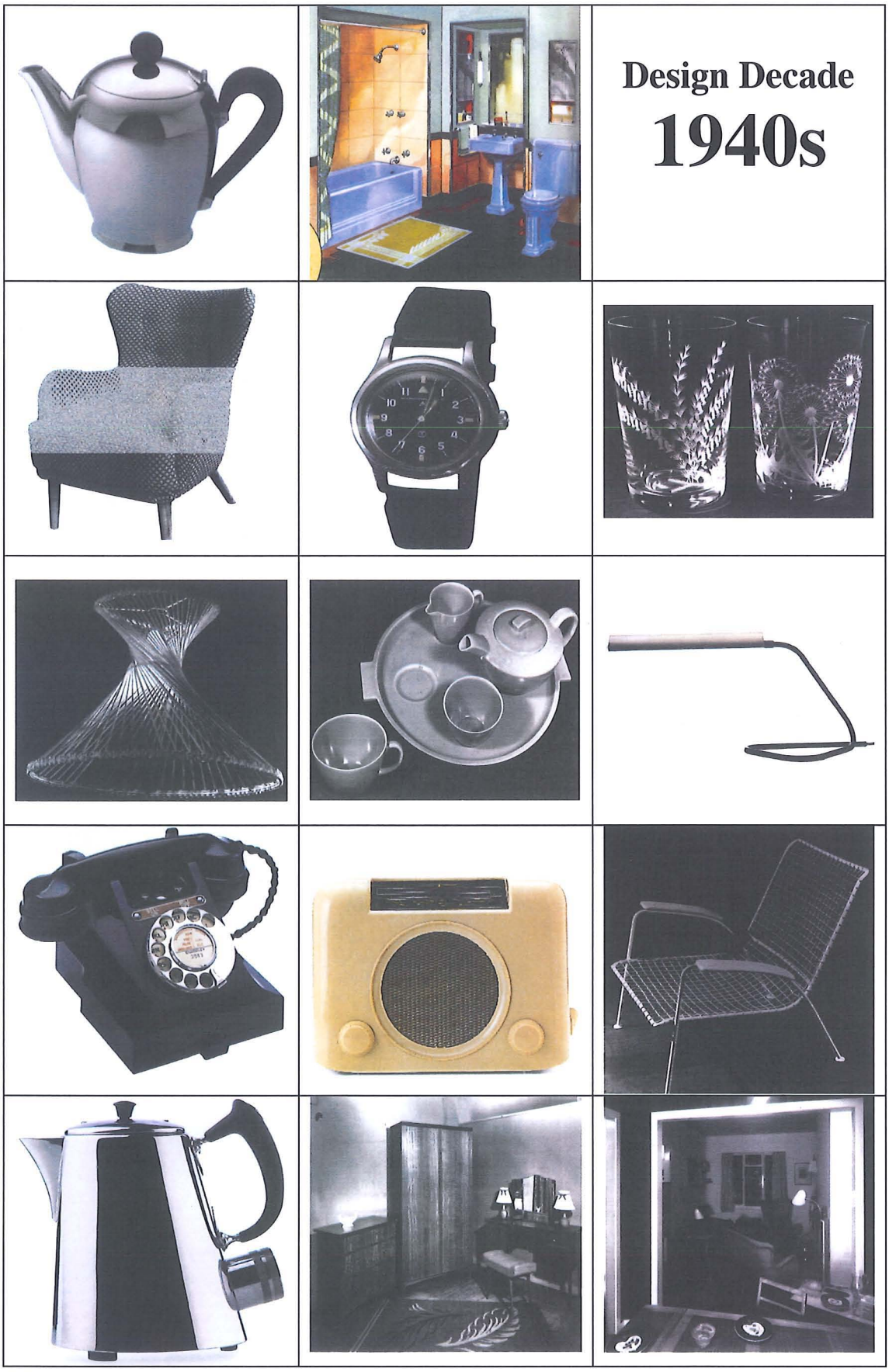



Figure 11, Design Decade Images1940s


Figure 12, Design Decade Images1950s


Figure 13, Design Decade Images1960s


Figure 14, Design Decade Images1970s

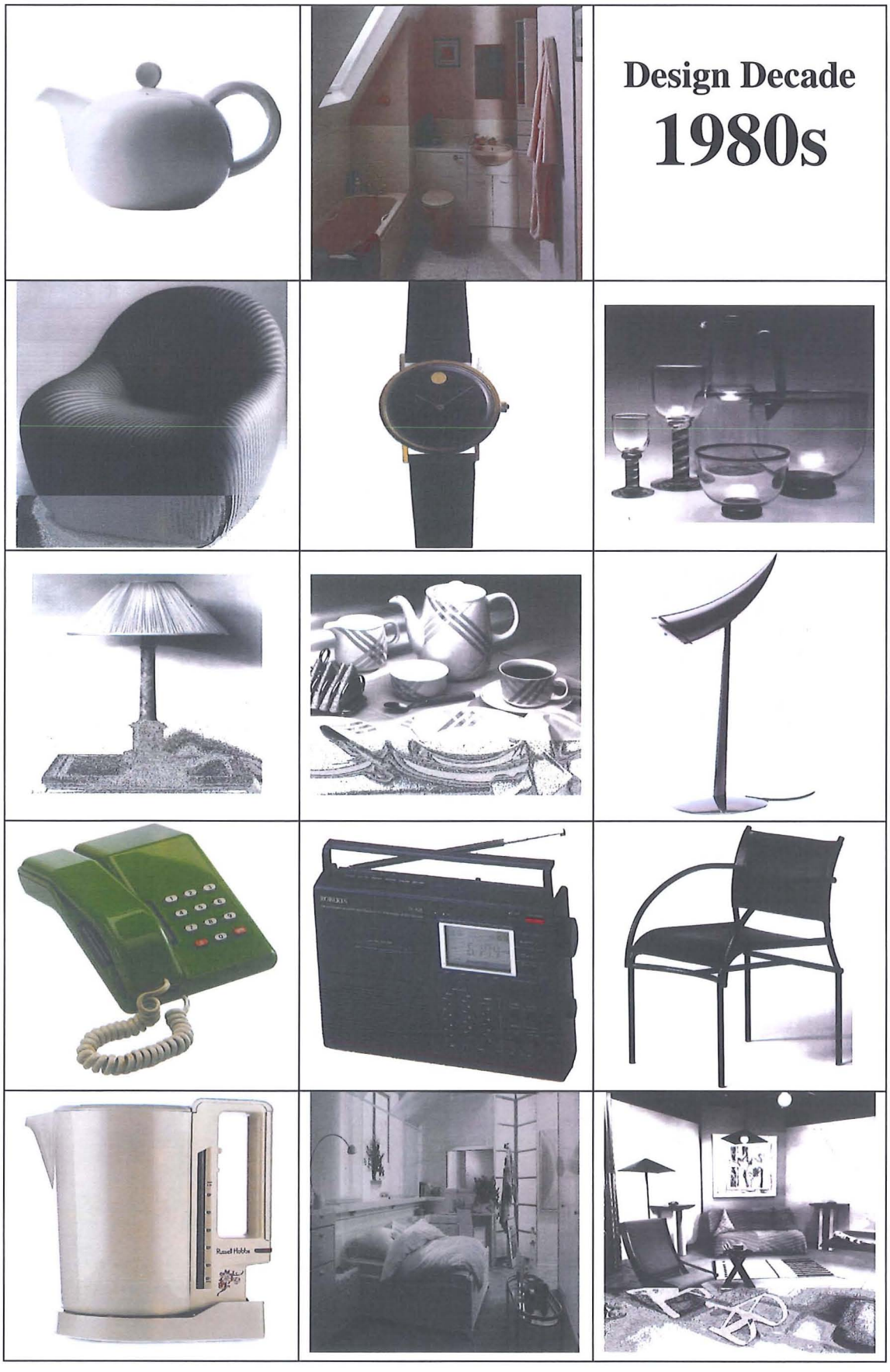



Figure 15, Design Decade Images1980s


Figure 16, Design Decade Images1990s

QUESTION DESIGN

The aim of the investigation was to find a reliable range of images and design a question that would obtain a response that was representative of the respondents visual preference. For the U3A sample to be validated by the postcode survey a minimum of 2,000 responses were required. From a 5,000 questionnaire mail shot, this represented a 40% response, an ambitious target even if U3A members provided a higher than average response.

With ninety-eight images, representing fourteen categories of products across seven decades of design, identifying preference might be a lengthy process. Initially it was proposed that respondents should rank their preferences one to seven for each product category. As part of the questionnaire design process a smaller range of images was presented to the research group at Central Saint Martins, were it was found that ranking each preference was difficult and many respondents failed to complete the process (section 3.2.6). For fourteen categories this was an arduous task requiring a high degree of reflection and consideration, the opposite of the rapid intuitive responses desired, and vulnerable to respondent considerations of good or bad taste. Asking for the maximum information potentially available, from a seven point grading of preference, might reduce both the intuitive quality and quantity of the responses achieved. If the task was too difficult respondents might fail to complete the questionnaire, which would reduce the chances of achieving a 40% response rate.

If the response rate were assumed to fall as the complexity of the task increased, there was a case for reducing the complexity of the question to increase the number of responses. The question design had, therefore, to satisfy two potentially opposing requirements, a high response rate and a desire for maximum data.

The question became not: *'how we can avoid loss of information but rather at what point we can best afford to lose information'* (Oppenheim, 1992, p.116). To anticipate the optimum number of questions to ask, in relation

to the responses achieved, the potentially opposing issues were converted into simplified numeric information and compared (figure 17).

| Questions Asked | Information Available | Responses Completed |
|---|---|---|
| 0 | 0 % | 5,000 |
| 1 | 14.3 % | 4,284 |
| 2 | 28.5 % | 3,570 |
| 3 | 42.8 % | 2,856 |
| 4 | 57.1 % | 2,142 |
| 5 | 71.4 % | 1,428 |
| 6 | 85.7 % | 714 |
| 7 | 100.0 % | 0 |

Balance point between issues.

Figure 17, Estimated Comparison of the Relationship between Questions Asked, Information Available and Responses Achieved.

If the relationship between questions asked and information available was simplified into percentages, where asking seven questions achieved 100% of the information available, each question would have a value of 14.3% of the total information available, (figure 17, second column). Similarly, if the responses asked were in relation to the questions asked, of the 5,000 possible responses divided by seven questions, each question might represent 714 responses (figure 17, third column). If it were assumed that the more questions asked, the fewer responses would be achieved, then the responses could be estimated in relation to the information available and the questions asked. Whilst these numbers represented broad estimations they offered a guide to the balance point between the issues, of questions asked, information available and responses achievable.

From the estimate three or four questions would achieve a balance between the issues, and anticipated achieving between 2,142 and 2,856 responses. These estimates were both in excess of the 2,000 responses required to validate the sample via the postcode analysis. By considering potential issues within these parameters, and erring on the side of caution, three questions were selected and defined as, 'Liked', 'Disliked' and

'Neutral'. In addition, the 'use value' of these questions to the analysis would be higher than the predicted minimum estimated response of 42.8% of 'information available'. The essential information for design was concentrated around the two extreme preference selections, 'Liked' and 'Disliked'. Whilst the third, 'Neutral' point, offered insights into areas of preference tolerance (figure 18).

**Questions about products you like the look of**

Refer to the picture booklet. From each product set, choose:
- the product **you like most and put its number in the first box**
- the product **you dislike most** and put its number in the middle box
- a product **you neither like nor dislike** and put its number in the end box.

For example:
Like Dislike Neutral
[3] [1] [4]

| Products | Like | Dislike | Neutral | Products | Like | Dislike | Neutral |
|---|---|---|---|---|---|---|---|
| Teapots | ☐ | ☐ | ☐ | | ☐ | ☐ | ☐ |
| | | | | ~~Ceramics~~ | | | |
| Soft chairs | ☐ | ☐ | ☐ | Radios | ☐ | ☐ | ☐ |
| Soft lighting | ☐ | ☐ | ☐ | Bedrooms | ☐ | ☐ | ☐ |
| Telephones | ☐ | ☐ | ☐ | Glass | ☐ | ☐ | ☐ |
| Kettles | ☐ | ☐ | ☐ | Desk lamps | ☐ | ☐ | ☐ |
| Bathrooms | ☐ | ☐ | ☐ | Hard chairs | ☐ | ☐ | ☐ |
| Watches | ☐ | ☐ | ☐ | Living rooms | ☐ | ☐ | ☐ |

Figure 18, Section 2 - Visual Preference

An 'ideal' result would have aimed for complete analysis of each constituent part of the visual question. However, the pilot identified that administering the questionnaire imposed constraints that forced analysis and prioritisation of the influential factors during the pre-questionnaire design phase. If these issues had been left unresolved, until after the questionnaire, the desire for 'perfect' images and maximum data would have reduced both the quantity

and quality of the information obtained from the respondents, reducing the effectiveness of the analysis. Having resolved the visual issues and the design of the question, the focus turned to the text based question.

### 3.2.5 SECTION 3: FACTORS THAT INFLUENCE DECISIONS TO PURCHASE

Section 3 defined 'attitude' scales related to factors that influence decisions to purchase products identified from the review of design for an ageing population and the semi-structured interviews with design professionals. The third section of the questionnaire completed the internal triangulation of questions:

Section 1 identified the respondents by definition of their age and lifestyle, validated by the postcode analysis within the terms of the investigation.

Section 2 asked for intuitive, unconscious visual preference selections.

Section 3 asked for rational, conscious considerations of values associated with purchase decisions.

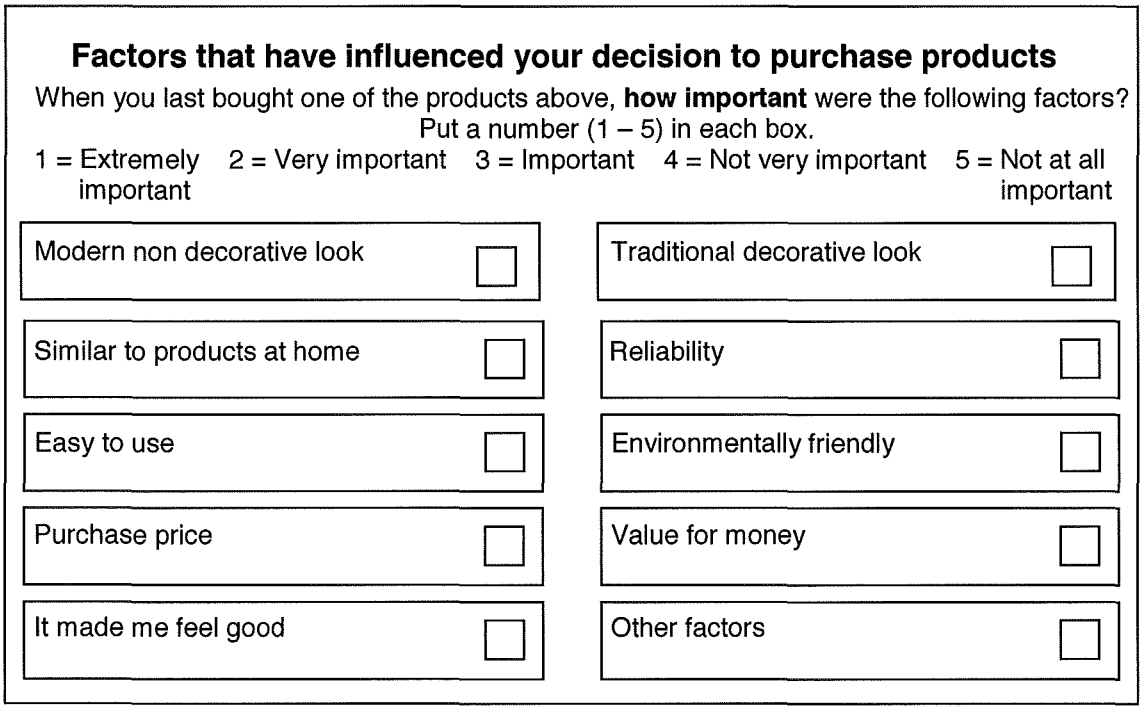
Section 3 of the questionnaire aimed to understand consumer attitudes to factors that influence decisions to purchase products. Acknowledging that attitudes were no guarantee of behaviour but more: *'a state of readiness'* (Oppenheim, 1992, p.176). The question aimed to measure the sensitivity of attitudes by a variation of the Likert five-point attitude scale (Youngman, 1982, p.10), namely 'extremely important', 'very important', 'important', 'not very important' and 'not at all important'. Five variations allowed a range of expressions of interest by respondents, which was important;

*'because if they are interested they are likely to give considered rather than perfunctory answers, but also because in many situations people may, not unreasonably, just not be prepared to co-operate in something that appears boring'* (Robson, 2nd ed., 2002, p.293).

Asking for influential factors at the point of purchase decision was designed to identify the strength of attitudes. These attitudes might reflect more conscious, rational considerations than those reflected in the preceding visual preference section. These questions aimed to challenge the potential separation of visual utility and physical functionality, form and function, to support the proposal that visual preferences prompt emotional

responses to products and therefore, possess a functional and financial utility. And if so, supported the value of interrogating visual preferences in order to prompt design that incorporates emotionally sensitive product forms for consumers post fifty.

The design factors were drawn from the semi-structured interviews with design professionals and design literature, and were sub-divided to identify eight factors. The questions were grouped into categories of form, function and price, in order to gain meaning from the group associations and therefore, to: *'maximise the more stable components while reducing the instability due to particular items'* (Oppenheim, 1992, p.147). The factors reflected both positive and negative perspectives on the issues (Robson, 2nd ed., 2002, p.294). A ninth factor, 'It made me feel good' was included to assess personal acknowledgements of the emotional value of products within purchase decisions. A tenth open question, 'Other Factors,' was included to offer the opportunity of individual responses (Oppenheim, 1992, p.114) after the series of closed questions (figure 19).



**Factors that have influenced your decision to purchase products**

When you last bought one of the products above, **how important** were the following factors?
Put a number (1 – 5) in each box.

1 = Extremely important 2 = Very important 3 = Important 4 = Not very important 5 = Not at all important

| | | | |
|---|---|---|---|
| Modern non decorative look | ☐ | Traditional decorative look | ☐ |
| Similar to products at home | ☐ | Reliability | ☐ |
| Easy to use | ☐ | Environmentally friendly | ☐ |
| Purchase price | ☐ | Value for money | ☐ |
| It made me feel good | ☐ | Other factors | ☐ |

Figure 19, Section 3 of the Visual Questionnaire

- **FORM referred to the questionnaire factors:**

**'Modern non decorative look', 'Traditional decorative look' and 'Similar to products at home'.**

If function and price were equal, the form of a product, beyond the appearance necessary to fulfil its functional purpose, might determine how consumers differentiate between products. The degree of ornament or decoration may determine the selection of one style over another. The investigation simplified these concepts within two categories of, 'Modern Non-Decorative Look', and 'Traditional Decorative Look'. These apparently simplistic, polarised statements reflected long standing design issues. The design historian Jonathan Woodham observed of the:

> *'two opposing ideologies. The first embraces notions of rational, functional aesthetic .... The second ideology expresses ... meaning through the use of ornament and decoration'* (1993, p. 346).

Within the semi structured interviews (chapter 4), values attributed to notions of design preference varied from assumptions for a preference within retirement homes for: *'traditional motifs in furniture design'* (Eckersley, personal interview, 10.06.1998), to an expectation of diversity in preference combined with: *'less brand awareness'* (Darbyshire, personal interview, 30.06.1998), and a willingness within the designer to find sensitive references for consumers post fifty and undertake an: *'exploration of what that might mean'* (Grinyer, personal interview, 07.07.1998).

The questionnaire recognised the power of simplistic notions of 'traditional' or 'modern design', 'high' or 'low' decoration and the disadvantages of alternative interpretations. For example, the small floral motif, under the manufacturers name in the 1980s Russell Hobbs kettle (figure 15), might be considered as traditional and relatively unobtrusive by some consumers, whilst others may not tolerate the decoration.

The investigation proposed that in the questionnaire context, it might be more desirable to understand general attitudes to concepts such as 'modern' or 'traditional', rather than be distracted by attempting to offer

overlong specialist definitions. Specialist definitions create impressions of understanding within the confines of design studios and within professional language but these defining categories are less meaningful, or even irrelevant to the consumer. Or as Richard Satherley noted, people are not *'really interested in design. They need to have it shown to them'* (personal interview, 11.06.1998). The highly subjective use and fashionability of language within the design profession might also have created misunderstanding between design professionals and respondents. The aim, therefore, was to find terminology that expressed the general flavour and nature of each sub group, while at the same time was understood to represent the same issues to both designers and respondents. In other words, that the question was both reliable and valid (Thomas, 1978, p.7).

The opposing characteristics of the design options, 'modern non-decorative' and 'traditional decorative', were clarified by comparison with each other. A third sub-factor, 'similar to products at home' was included to challenge the assumption, drawn from the semi-structured interviews with designers, that those post fifty had little interest in design of any description (section 4.2.2, question 2.4): *'Design is essentially fashion and young people tend to be more interested in fashion than older people, it's very simplistic but that seems to be the case'* (Levien, personal interview, 11.06.1998). Whether this is so is debatable but the assumption remains potent. A high degree of importance attached to replacing products similar to those already owned might have indicated lack of interest in design, or conversely, might suggest a high degree of interest in actively maintaining an existing design preference established over a lifetime of consumption.

- **FUNCTION referred to the questionnaire factors: 'Reliability', 'Easy to use' and 'Environmentally friendly'.**

In the questionnaire 'function' was restricted to the primary role for which a product was designed, rather than any role imposed by social interaction or communication. As the population ages functional requirements may become increasingly important, if it is assumed that physical strength and flexibility decreases with ageing. Any data which prompts increased attention to functional design represents a positive contribution to users whatever their age. Similarly, knowledge of consumer attitudes to product

'reliability' and 'ease of use' were useful notions for inclusion in any design process.

With the increasing importance of environmental issues, design has responded to concepts such as: *'resource accounting which emphasise the lifetime costs of a product'* (Thrift, 1996, p.41). The inclusion of the 'environmentally friendly' category aimed to challenge ageist assumptions, which question whether consumers post fifty were knowledgeable of, or interested in such concepts.

- **PRICE referred to the questionnaire factors: 'Purchase Price' and 'Value for Money'.**

'Purchase price' and 'value for money' related to the point of purchase and price relative to similar products, and the value of these products experienced by use through time. If design criteria incorporated assumptions based on social stereotypes, these might extend to spending patterns and attitudes to value. For example, long-term austerity may have influenced the attitudes of consumers who lived through the depressed pre and post Second World War economy of the United Kingdom, 1930 – 1960 (Gabriel, 1990, p.23). Assumptions of such an effect might indirectly influence the materials used within the design process and the qualities promoted via subsequent marketing. As expectations of life diminish post fifty, consumers may adopt attitudes that exaggerate or contradict ideas of value developed through a lifetime of consumption.

- **Questionnaire factor 'It Made Me Feel Good'.**

The 'feel good' factor was included to contrast the economic limitations of pricing and practical considerations associated with the primary functionality of products. In products for the very young there appears a preference for bright colours and decorations with smiling faces. Along the age continuum products and advertising retain many of the feel good features, implicit within youth orientated associations, as design criteria. Post fifty, there may be a tendency for more sober and subdued design. The investigation aimed to challenge the notion of U3A consumers as an homogenous group with an age-related preference for beige or bland 'grey design'.

The investigation questioned whether the emotional needs, that design may aim to satisfy, decline with age. Potentially negative societal expectations and perhaps, unfamiliar terminology might prompt reduced values associated with 'feeling good'. Questioning the emotional appeal of products may increase awareness of and expectations within the respondents and, from the analysis of the results, within designers.

- **Questionnaire factor OTHER FACTORS**

The previous questions were closed, in that they restricted the ability of respondents to vary their responses to a one to five expression of importance. The: *'disadvantages of closed questions are the loss of spontaneity and expressiveness. ... if respondents become irritated because they feel that the choice of answers fails to do justice to their own ideas'* (Oppenheim, 1992, p.114). To minimise these issues and to draw on the knowledge of the respondents the 'other factors' question was included.

It was important for the investigation to be open to the opinions of the respondents and to acknowledge any unintentional bias that may have been incorporated into the design of the questionnaire by myself, as a designer and younger than members of the U3A. Although, as Robson notes, there are advantages and disadvantages in being a: *'practitioner-researcher'* (1993, p.447) and in recognising the need for sensitivity.

### 3.2.6 PILOTING THE DESIGN OF THE VISUAL QUESTIONNAIRE

The development of the questionnaire was continually tested against a range of opinion, from colleagues at Central Saint Martins and design professionals to international conference attendees. Issues of usability and ease of completion were considered against the information achieved. In addition, at formal points in the development of the questionnaire it was tested and re-tested via pilot studies that were: *'considered an integral part of any research'* (Youngman, 1982, p.4).

The pilot process was an integral element in the design and development of the questionnaire and the inclusion of the innovative visual question and is thus described at this point within the methodology. This placing is in

contrast to the pilot process associated with the interviews. The interviews used an established method and the pilot process was limited to only minor reviews within the question terminology. As these changes represented changes within the use of the method, rather than its essential design, the pilot process for the interviews is included within the reporting of the methods, analysis, findings and initial discussion (Chapter 4). In contrast to the pilot process for the visual questionnaire, which is reported here.

As part of the development of the questionnaire an initial pilot was presented to the Central Saint Martins College of Art and Design Research Group. This pilot included a small number of product categories where the images were randomised to avoid patterns of preference emerging. Responses were given next to the images selected and preference was ranked one to seven. The feedback from the pilot group identified strong feelings expressing the opinion that although visual preference may favour particular products a host of other issues affected decisions to purchase. In addition, from a data collection perspective it was also found that the responses were difficult to retrieve from the questionnaires as the complete image folder had to be returned and the data individually removed and entered into a spread-sheet for analysis.

In response to the first pilot, the questionnaire was developed to include fourteen product categories. A text based question was also added that addressed the range of factors considered in decisions to purchase products. The extended size of the questionnaire booklet prompted the development of a separate response sheet to make it easier to return the responses.

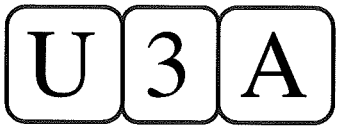
A second pilot was presented to the London Institute Research Group (later the University of the Arts London). From the responses to this pilot it was clear that ranking preference one to seven for fourteen categories was a difficult task, which prompted a low response rate, with missing data and much discussion prior to completing fully considered responses. As the investigation was interested in rapid intuitive responses this was a significant issue for the design of the questionnaire.

In response to this second pilot the questionnaire was redesigned. The visual questions were simplified into three responses and the ninety-eight images and associated information laid out to create an attractive folder. It had been hoped that if the questionnaire were attractive and interesting to complete this would have a positive affect on the response rate (Robson, 2nd ed., 2002, p.293). In addition, U3A agreed to distribute the questionnaire to its members and Acorn agreed to analyse the responses for postcode information to validate the sample, which allowed personal details to be kept to a minimum. The scale of the potential sample grew rapidly and consequently it was essential to design the response form to be efficient to complete, return and retrieve data. Computer scannable technology was identified and the final response form followed guidance to allow rapid retrieval and direct transfer into a data analysis program (Readsoft, 1999). Separation of the response sheet from the visual booklet reduced the weight of the return postage and the number of sheets to be scanned. In the questionnaire booklet each product category had seven images, representing the seven decades 1930 – 1990 (figure 20). To avoid the design decades being easily recognised or patterns of preference emerging, the order of design decades was randomised and each image numbered. The numbering system allowed rapid completion of the response form and efficient computer scanning, and retrieval of the feedback data.

The development process and third pilot of the questionnaire was presented in a poster presentation at the European Academy of Design Conference (Wright 1999a), The London Institute Research Symposium Wright (Wright 1999b) and to attendees at *Matrix 4: Conference on Research in Design and Art Practice* (Wright 1999c). The conference attendees were sceptical that 'older' consumers would be either interested in or able to complete the questionnaire.

Whilst this pilot process was not specifically aimed at the U3A age group, this was not considered detrimental as issues of age should not affect the ability to complete the questionnaire. With each of the three stages of the pilot process the survey methods were refined and the elements analysed and recorded. The responses from the third pilot at the *Matrix Conference* were disappointing, as they reflected reservation based on hypothetical

and negative assumptions related to the ageing population, rather than responses specifically related to personal experience. After reflection, with only minor adjustments to the covering letters the questionnaire was finalised, printed and posted in September 1999. The questionnaire was sent to the group secretaries of the U3A in batches of fourteen and twenty four, depending on the location and size of the group. Each batch accompanied by two covering letters, the first, kindly supplied by Ms. Lin Jonas, National Administrator for the U3A, accrediting and introducing the questionnaire and the second, explained the aims of the investigation. Each U3A member who wished to participate received: U3A letter of endorsement, letter of introduction, a visual booklet, a computer scannable response form and a stamped addressed return envelope (figure 20).




THE UNIVERSITY OF THE THIRD AGE

**THE THIRD AGE TRUST**

26 Harrison Street London WC1H 8JG
Telephone: 0171-837 8838 Fax: 0171-837 8845
e-mail: national.office@u3a.org.uk web site: hhtp//u3a.org.uk

October 1999

To all Business Secretaries

I was approached by Elizabeth Wright of Central St Martins College of Art & Design to ask if I thought U3As would assist them in a design project. As you can imaging we get approaches from a considerable number of people doing research projects, and in most cases, for various reasons, we do not co-operate. However, I do feel this one, which investigates the factors which influence our choices of products, in order to assist designers in their search for a more sensitive approach, would be of interest to a lot of people and I know quite a few U3As have been involved in similar projects previously with the Royal College of Art.

So, I have agreed to send these out to you and I hope you will find the time to complete them and return them in the s.a.e. provides.

Many thanks.

Lin Jonus
National Administrator

Figure 20: Visual Questionnaire Pack

**THE LONDON INSTITUTE**

Central Saint Martins
College of Art &
Design

Academic Environment

Head of Academic Environment:
Malcolm Johnston

27th September, 1999

Dear U3A Secretary,

Please find enclosed twenty four questionnaire booklets, response forms and stamped self addressed envelopes.

The questionnaire is part of a research project called Design for Ability at Central Saint Martins College of Art & Design. The research investigates the factors which influence our choice of products, to assist designers in a more inclusive and sensitive design approach.

The success of the research will rely on a high response rate and I am grateful to The Third Age Trust for their permission to approach your group to ask for your assistance. I should be grateful if you could circulate one copy of each of the booklet, response form and envelope to those interested members aged between fifty and seventy five years (the specific research focus) and ask them to complete and return the response form as soon as possible.

The responses will remain confidential but if you would like a copy of the analysis, please write to me, Elizabeth Wright, at Central Saint Martins.

With many thanks for your time and consideration.

Your faithfully,

Elizabeth Wright

**THE LONDON INSTITUTE** Product Choice Questionnaire

## Your personal details

Indicate your age and sex by marking the appropriate box with an **X** and enter your full postcode.

| | | |
|---|---|---|
| 50-55 56-60 61-65 66-70 71-75 | Male Female | |
| **Age:** ☐ ☐ ☐ ☐ ☐ | **Sex:** ☐ ☐ | **Postcode:** ☐ |

### Questions about products you like the look of

Refer to the picture booklet. From each product set, choose:
- the product **you like most and put its number in the first box**
- the product **you dislike most** and put its number in the middle box
- a product **you neither like nor dislike** and put its number in the end box.

For example:
Like Dislike Neutral
3 1 4

| Products | Like | Dislike | Neutral |
|---|---|---|---|
| Teapots | ☐ | ☐ | ☐ |
| Soft chairs | ☐ | ☐ | ☐ |
| Soft lighting | ☐ | ☐ | ☐ |
| Telephones | ☐ | ☐ | ☐ |
| Kettles | ☐ | ☐ | ☐ |
| Bathrooms | ☐ | ☐ | ☐ |
| Watches | ☐ | ☐ | ☐ |

| Products | Like | Dislike | Neutral |
|---|---|---|---|
| Ceramics | ☐ | ☐ | ☐ |
| Radios | ☐ | ☐ | ☐ |
| Bedrooms | ☐ | ☐ | ☐ |
| Glass | ☐ | ☐ | ☐ |
| Desk lamps | ☐ | ☐ | ☐ |
| Hard chairs | ☐ | ☐ | ☐ |
| Living rooms | ☐ | ☐ | ☐ |

*Factors that have influenced your decision to purchase products*

When you last bought one of the products above, **how important** were the following factors?
Put a number (1 – 5) in each box.

1 = Extremely important 2 = Very important 3 = Important 4 = Not very important 5 = Not at all important

| | | | |
|---|---|---|---|
| Modern non decorative look | ☐ | Traditional decorative look | ☐ |
| Similar to products at home | ☐ | Reliability | ☐ |
| Easy to use | ☐ | Environmentally friendly | ☐ |
| Purchase price | ☐ | Value for money | ☐ |
| It made me feel good | ☐ | Other factors | ☐ |

**When completed please return this form in the pre-paid self addressed envelope supplied.**

THE LONDON INSTITUTE

**Central Saint Martins**
**College of Art & Design**
Southampton Row, London WC1B 4AP

*This questionnaire forms part of a project by Design for Ability Research at Central Saint Martins College of Art and Design.*
*The research investigates the factors which influence our choices of products, to assist designers in a more inclusive and sensitive design approach.*

*The effectiveness of the research relies on your response and I should be grateful if you could give a few moments to complete the Questionnaire response form*
*And return it in the pre-paid self addressed envelope. Your personal choices are important, so please do not discuss your thoughts before completing the Questionnaire.*

*Your responses will remain confidential and should you like a copy of the analysis, please write to me, Elizabeth Wright, at Central Saint Martins.*

*With very many thanks for your time and consideration.*

*Elizabeth Wright*
*Design for Ability*
*Central Saint Martins College of Art & Design*

Design for Ability
Product Choice Picture Booklet

**Questions about products you like the look of**
Enter your answers on the Questionnaire response form. From each product set in this booklet, choose:
- the product **you like most** and put its number in the first box
- the product **you dislike most** and put its number in the middle box
- a product **you neither like nor dislike** and put its number in the end box

| *For example:* | Like | Dislike | Neutral |
|---|---|---|---|
| **Teapots** | *3* | *1* | *4* |

Many individuals have contributed to this questionnaire. In particular, grateful thanks are acknowledged for the use of pictures to:
The Design Council Archive – Brighton, The Ivy Press – The Design Icons Series, Ideal Standard, Armitage Shanks, Habitiat, Ikea, Dartington Glass, Roberts Radio, Hulsta, Satelliet, Chelsom, FX Magazine & Design Magazine.

**Teapots**

1 

2 

3 

4 

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6 

7 

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**Soft Chairs**

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2 

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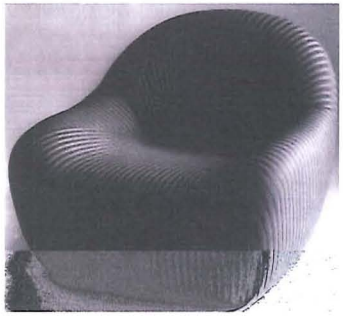
5 

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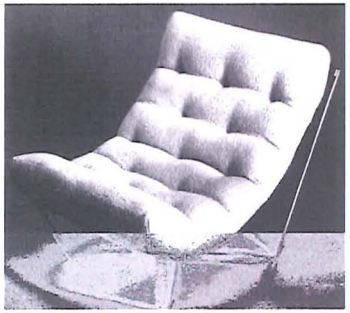
7 

**Watches**

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**Ceramics**

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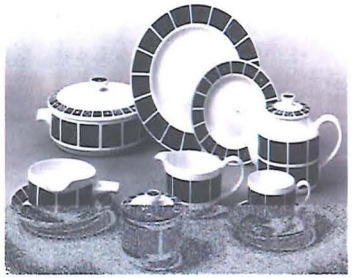
7 

**Radios**

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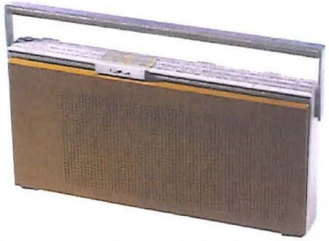

**Bedrooms**

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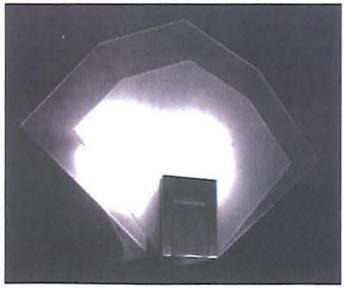
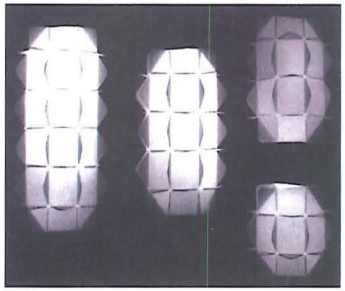
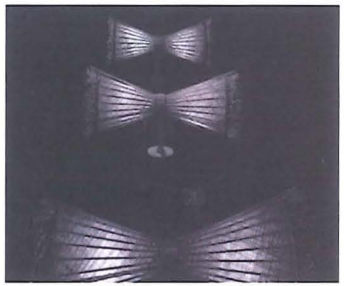
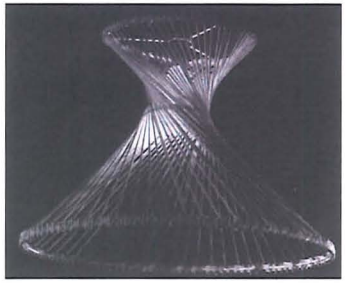
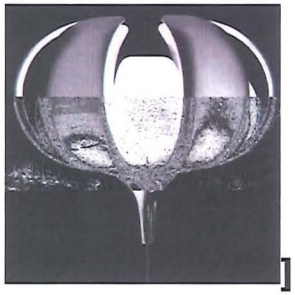
**Soft Lighting** 1  2  3  4 

5  6  7  ]

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**Telephones** 1  2  3  4 

3  4  5 

**Kettles**

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**Bathrooms**

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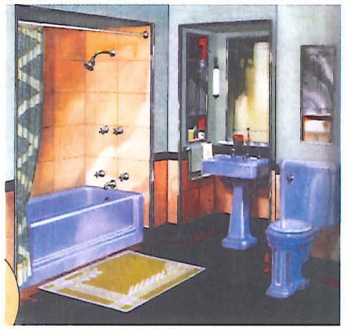

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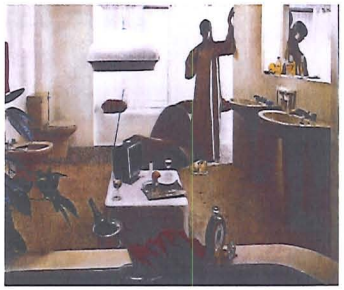
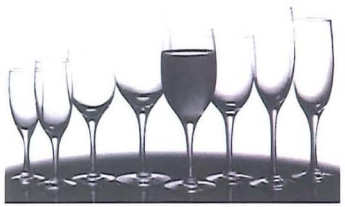
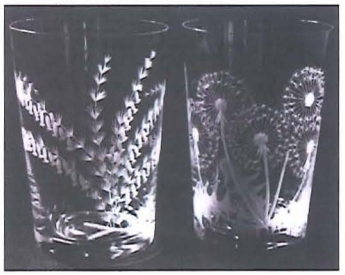


**Glass**

1 

2 

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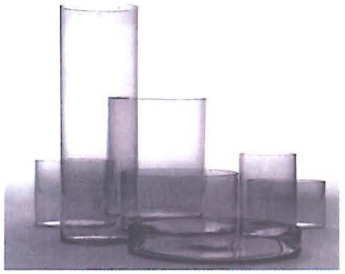
4 

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**Desk Lamps**

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**Hard Chairs**

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**Living Rooms**

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### 3.3.1 OVERVIEW

Using qualitative interviews and quantitative questionnaire methods presented a number of issues. The selection of methods was made pragmatically in response to the groups identified and the questions raised. This selection incorporated a mixture of methodological traditions and expectations related to the types of data generated from qualitative and quantitative methods. Robson addresses these issues by proposing *'critical realism'* as the basis for selection of methods, an approach that permits the integration of subjective and objective measures;

> *'The new integration argues that social structure is at the same time the relatively enduring product, and also the medium, of motivated human action. This allows both subjectivist and objectivist approaches to co-exist. Social structures such as language are both reproduced and transformed by action, but they also pre-exist for individuals. They permit persons to act meaningfully and intentionally while at the same time limit the ways in which they can act'* (2002, 2nd ed., p.35).

This process echoed initial thoughts around the development of language used by professional groups and the visual preferences of consumers. Each represent social structures that *'are both reproduced and transformed by action but they also pre-exist for individuals'* (Robson, 2nd ed., 2002, p.35).

Using a flexible, qualitative interview method provided an exploratory process from which to identify attitudes and beliefs associated with design and the ageing population. These findings could then be compared against the fixed, quantitative questionnaire from which analysis of the visual preferences of the respondents identified the relationship to formative periods.

Robson goes on to identify additional advantages of mixed methods approaches, not least that a combination potentially triangulates the data, methods, theories and perspectives on which they are based (2002, p.174). Similarly, Robson acknowledges the value of small-scale individual elements, within larger scale perspectives. The flexibility of this approach allows understanding of issues to develop and emerge

from the research in a reflexive process. This combination of methods and analysis established an iterative reflexive cycle of interrogation familiar to the design process described by Schon (1983) and Cross (1990). Where the flexibility and ambiguity at the heart of the design process offers the potential to move design thinking *'to a new part of the solution place'* (Cross, 1990, p.427) (figure 21). This process and these aims reflected those of the investigation, to reassess the design preferences of consumers post fifty, develop visual questionnaire methods to test if there are formative periods for preference and use the findings to propose a design tool to move to more positive perceptions of design for an ageing population.

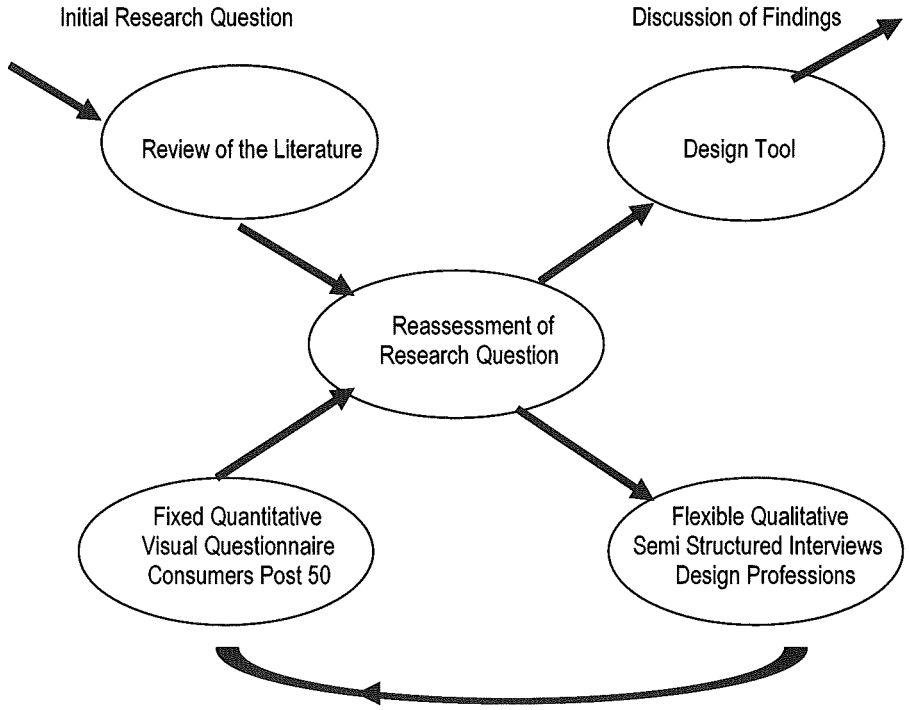



Figure 21: Iterative Cycle of Interrogation

# CHAPTER 4: INTERVIEWS WITH DESIGNERS

This section analyses the audio-recorded responses from a series of semi-structured interviews with design professionals completed over a six-week period in the summer of 1998. Designers were interviewed to identify their understanding of consumers post fifty within the design to production process. The interviews aimed to test the assumption of a potential gap in empathy and knowledge between younger designers and consumers post fifty to challenge design responses based on negative assumptions of ageing. An interview survey offered the opportunity to identify attitudes of design professionals, inform the design of the visual questionnaire to allow comparison of the findings against the U3A responses and use the findings within the proposed design tool for design for an ageing population.

This chapter considers the issues involved in piloting the interview process (section 4.1.1), establishing a protocol (section 4.1.2), completion and transcription (section 4.1.3) of the interviews. The analysis then reviews the designers responses following the order of the questions asked in the interview (Robson, 2nd ed., 2002, p.275), 'basic information' (section 4.2.1) about the interviewees, 'perceptions of the consumer' (section 4.2.2), 'visual preferences' within the design process (section 4.2.3), and perceptions of the 'production process' (section 4.2.4) to anticipate the value of the design tool (section 4.2.5). Each section reviews the analysis of the findings contextualised and reflected on by reference to relevant literature, prior to the key points and central themes being drawn together within 'the review of the findings' (section 4.3.1).

### 4.1.1 THE PILOT PROCESS

Following the process described in Chapter 3 (section 3.1.2) a question structure was designed to identify: *'relevant information, that contains no redundant items and eliminates questioner bias'* (Wragg, 1978, p.13). Following these principles the interviews included: a formal introduction, followed by five sets of questions; each set focused on a different aspect of the investigation. The questions asked for 'basic information' about the interviewees, their 'perceptions of the consumer', the use of visual references and 'visual preferences' within the design process, and perceptions of design within the 'production process' to anticipate the

value of the proposed design tool. Within these headings the specific questions evolved in response to the pilot process.

An initial list of questions was piloted in consultation with an independent advisor. The refined questions were then re-piloted using volunteers from the Central Saint Martins research group. This pilot was designed to identify and remove overly long, or double barrelled questions, any jargon, leading statements or bias and the time required to complete the interview (Robson, 1993, p.232).

Analysis of the responses from the second pilot phase, together with reflections on the process of completing the interviews, informed a third revised interview schedule. This draft was re-piloted using colleagues at Central Saint Martins who were independent from the investigation and had professional design practices. In each of the pilot phases the volunteers were appropriate to the needs of the study as they all had design expertise and were familiar with the issues identified within the survey.

An additional pilot phase was anticipated. However, with the exception of minor changes in the phrasing of the questions, the interview structure was successful and was maintained. With only minor changes these interviews were included within the analysis of the findings.

The final selection of interviewees was made by recommendation. The design community represent a relatively small network of professional practitioners. To gain access to this group I was fortunate to extend my search by personal recommendations from colleagues at Central Saint Martins. In this sense the designers were an opportunistic sample (Wragg, 1978, p.5), located within London. However, their range of clients and, therefore, their sphere of influence, spread across the United Kingdom and international markets. The interviewee selection was representative within the general parameters of the research and specifically within the survey by the broad range of disciplines and areas of practice embraced by 'design', the organisations' scale and structure, and the age and sex of the designers (section 4.1.1).

The pilot process, interview structure and implementation were designed, initiated and completed in response to Robson's advice: *'to throw up some of the inevitable problems of converting your design into reality'* (Robson, 1993, p.301). Each of the three pilot stages were reviewed and the findings reflected on for all aspects of the process prior to designing the subsequent phases.

### 4.1.2 INTERVIEW PROTOCOL

Having completed the design of the questions a protocol was required to allow a consistent and comparable experience between interviews.
The interviews were arranged by telephone at a time and place convenient for the designers. The interviews were structured by briefly introducing myself as the researcher, the area of investigation was outlined but the focus of the research, the ageing population, was withheld in the first instance to avoid biasing the interview. A time frame of thirty to forty-five minutes was anticipated. Forty-five minutes was considered to offer a balance in time between achieving valuable feedback without taking too much time from the designers (Robson, 2nd ed., 2002, p. 273). This estimate of time was proposed and tested prior to the interviews and subsequently challenged by Richard Satherley when arranging the interview, as he asked if I knew how much he charged for an hour of his time! However, whilst the questions and responses did take about forty-five minutes, the conversation they provoked and the enthusiasm of the designers meant that sometimes the interviews went beyond these parameters and this included Richard Satherley.

The interviews were held in quiet areas of the designer's office, to reduce inconvenience and ensure a relaxed and comfortable atmosphere for the interviewees. The interview schedule started by briefly restating the basic aims of the investigation. Again in order to avoid biasing the interviews the focus of the ageing population was not mentioned. Whilst there were no direct ethical issues involved in the questions, the concept of informed consent was discussed and the interviewees were asked to read and sign an informed consent form to establish the context of the research and to avoid misunderstandings. In addition, the interviewees were asked to consent to the interview being audio recorded. Audio recording helped to

achieve a relaxed atmosphere, whilst allowing accuracy from later transcription (see Appendix 1 for further details).

Only after these preliminary stages were completed could the interview begin. Whilst each interview followed the same sequence, the aim was to create an informal atmosphere to ascertain genuine attitudes and beliefs rather than overly considered responses. To reduce the potential impact of my attitude or body language influencing the interviews, comments, prompting cues or responses were kept to a minimum (Robson, 2nd ed., 2002, p.274).

### 4.1.3 COMPLETION AND TRANSCRIPTION

At the end of the interviews the designers were asked if there was anything they wished to ask. This allowed the designers to raise questions that may have occurred to them, to expand, clarify or amend earlier responses. The interviews were concluded by thanking the designers for their time and consideration. The following day, a formal letter of thanks was sent on headed college paper. The group was interviewed within a six-week time scale to reduce the effect of time within the responses and to provide a snap shot of attitudes.

After each interview the recordings were played back to allow reflection on the content and to assess the responses in relation to the other interviews to date. After an initial phase of ten interviews a formal pause was planned to assess the findings and whether there was a convergence in responses. If the responses had shown a completely disparate range of responses further interviews were planned. However, the ten interviews completed revealed substantial areas of agreement together with some interesting variations and overall the responses were considered sufficient to proceed to the next phase of the investigation.

The audio recordings were transcribed and the process of analysis followed a similar path to that of refining the design of the questions, from general awareness of the issues and themes emerging from the text, to specific responses identifying key issues. Initially, all of the interview transcriptions were read a number of times to familiarise the contents. The straightforward information, such as name, age discipline, etc. was

tabulated and where appropriate, quantified. The purely qualitative questions were edited to reduce the data into manageable summary sheets that focused on the essence of the responses. A matrix was then constructed to display the data in a form to allow comparison between responses. The analysis looked for patterns of agreement and significant difference. Internally, an assessment was made to ensure that responses from all of the designers were represented within the analysis. Periodically, an independent reader provided an external perspective to ensure the analysis represented a fair review of the responses. Throughout the process additional notes and associations relating to the review of the literature and design of the visual questionnaire were kept as they occurred in a reflexive process. The following text integrates the responses and relevant secondary references to contextualise the findings.

Although informed consent to publish the interviews had been obtained at the beginning of the interviews, a significant period of time elapsed prior to any publication. To ensure that the interviewees were not misinterpreted, the analysis was fair and that the designers were happy to be quoted, in 2002 the interviews were followed up by sending a personalised but otherwise anonymous, copy of the analysis to each designer with a covering letter and stamped addressed envelop. The follow up offered an opportunity for the designers to change their opinions, comment on those of the other interviewees or the analysis itself. The designers were asked to respond if they objected in any way to the analysis and advised that if no response were given then it would be assumed that they were happy with the analysis. Of the ten interviewees, three confirmed their approval, seven remained silent, none of the designers objected, challenged or amended the analysis.

I am grateful to the designers for their enthusiasm, time and consideration. The analysis of the responses that follow is considered in the same order as the questions were put to the designers and is contextualised by additional reference to appropriate literature.

### 4.2.1. BASIC INFORMATION

**Section 1. Basic Information** - about yourself.

1.1 Your name
1.2 Your age
1.3 Your design discipline
1.4 Your company name or employer
1.5 The number of designers employed by the organisation you work for
1.6 The ratio of male to female designers

Figure 22: Section 1 semi-structured interviews.

**Question 1.1 Your name** (1st column, figure 23).

Whilst the survey sample were all located within London their range of clients and, therefore, their sphere of influence, spread across the United Kingdom and international markets. The interviewee selection was representative within the general parameters of the profession and specifically within the survey by the broad range of disciplines and areas of practice embraced by 'design', the organisations scale and structure, and the age and sex of the designers (see figure 23).

| NAME | INTERVIEW DATE | AGE | DESIGN DISCIPLINE | COMPANY | PEOPLE EMPLOYED | PERCENT-AGE MALE |
|---|---|---|---|---|---|---|
| Jackie Piper | 01.06.1998 | 29 | Industrial Design, Lecturer | Polaroid, CSM | Varied 5 Full time, | Male dominated. |
| Nick Rhodes | 02.06.1998 | 39 | 3D Design, Lecturer | Rhodes Design, CSM | 2 Full time 5 Full time. | 100% male |
| Chris Eckersley | 10.06.1998 | 45 | Furniture Design Lecturer | Freelance, CSM | Varied | Male dominated. |
| Richard Satherley | 11.06.1998 | 53 | Product Design, Engineering | Satherley Design Ass. | 7, 8 or more | 85% Male |
| Robin Levien | 11.06.1998 | 46 | Product Design | Queensbury, Hunt and Levien | 6 plus 4 partners | 90% Male |
| Martin Wharmby | 15.06.1998 | 57 | Product Design Toy Design | Wharmby Associates | 4 | 100% Male |
| Pauline Amphlett | 24.06.1998 | 40 | Industrial Des., Brand Strategy | DDG Brand Guardians | 5, 6 or more | 70% Male |
| Martin Darbyshire | 30.06.1998 | 37 | Product Design | Tangarine | 6 | 100% Male |
| Clive Grinyer | 07.07.1998 | 37 | Product Design | Fitch Design | 140 UK 350 World Wide | 80% Male |
| Hilary Dalke | 13.07.1998 | 51 | Product, Colour Specialist | South Bank University | 10 designers | 70% Male |

Figure 23: Designers Interviewed.

**Question 1.2 Your age** (2nd column, figure 23).

The age of the designers varied from twenty nine to fifty seven years, an average of forty three years across the sample. Although none of the designers withheld this information, it might have been more sensitive to have asked for their date of birth, as this would have identified the same information in a more age sensitive manner (Blaxter, 2001, p.176). By using age specific terminology it unintentionally sensitised the designers to the focus of the investigation. As Haskell notes, we often say far more than we realise by the terminology we use and the way we use it (Haskell, 2001). Using this terminology located the designers responses from their personal understanding of age rather than as part of a discussion solely focused on abstract notions of 'users'. The question of age was asked to determine whether perceptions of ageing were dependent on the age of the interviewee, or if they were consistent across all ages.

**Question 1.3 Your design discipline** (3rd column, figure 23).

All interviewees were professionally involved in at least one area of the product design process and sensitive to the importance of the visual characteristics of design. Specifically their professional experience extended to furniture design, engineering, colour prediction, brand management, teaching at graduate and postgraduate levels and a range of consultancy clients.

**Question 1.4 Your Company name or employer** (4th column, figure 23).

The structure of employment ranged from freelance projects to consultancies and large-scale educational institutions and reflected the diversity of working practices within design in the UK. The female designers practised, or defined their practice, as being in the more specialised advisory capacities of teaching, brand management and colour consultancy, whilst the males defined the majority of their practice as product design.

**Question 1.5 The number of designers employed by the organisation you work for** (5th column, figure 23).

Although the organisations within which the designers practised were diverse in scale, essentially they all worked in small teams of less than ten. However, their range of influence extended beyond these small teams via

connection with larger groups, either directly as in teaching scenarios, or professional networks, or indirectly via clients and manufacturing facilities.

**Question 1.6 The ratio of male to female designers** (6th column, figure 23). The ratio of male to female designers within the working environments varied from 70% to 100% male to female, an average ratio of 87% males to female. The interview sample of seven male to three female designers reflected the most balanced ratio within the working environments outlined by the designers. The imbalance between the sexes was noted as an example of a discrepancy between the constituency of the design profession compared to the general population. The focus of the investigation was designed to identify age related visual preferences and address the discrepancy in perceptions related to ageing between younger designers and consumers post fifty. The visual questionnaire and design tool were focused on issues related to age and visual preference. However, if discrepancies related to sex were also found these methods might be applied to refine the sensitivity of design responses for a range of issues.

Having established basic information about the designers and their working environments, the questions focused on their perceptions of the consumer.

### 4.2.2. PERCEPTIONS OF THE CONSUMER

Questions in Section 2 focused directly on the designer's perceptions of the consumer, from general perceptions, through assumptions related to ageing and finally specific perceptions of older consumers, over fifty years (figure 24).

**Section 2. Your Perceptions of the consumer**

2.1 Who would you describe as the 'consumers' of your design work?
2.2 Do you have a pre-conceived ideal consumer in mind when you design?
If so, can you describe them?
If not, how do you formulate your perception of the consumer?
2.3 In ten-year cohorts, e.g. 10 - 20, 20 - 30 etc., estimate the three decades where consumer spending power may be highest.
2.4 In ten year cohorts, estimate the three decades where consumer interest in design may be at its highest.
2.5 Do you think peoples preferences are formed by a certain time in their life and if so when?
2.6 What is your perception of older consumers, over 50?

Figure 24: Section 2 semi-structured interviews.

**Question 2.1 Who would you describe as the 'consumers' of your design work?**

The responses identified an even distribution between prioritising the client and end user. However, perhaps in recognition of the complexity of the relationships involved, responses overlapped, as Clive Grinyer observed:

> *'there are different consumers at different points in the process. There is the consumer of our design activity, which is the client, and they are the commissioners of our work. They have customers, those customers are not necessarily the final users or consumers of the product'* (Grinyer, personal interview, 07.07.1998).

Chris Eckersley agreed, suggesting that essentially perhaps:

> *'the person who gives you the brief, really, is the person who I have in mind'* (Eckersley, personal interview, 10.06.1998).

Whilst Martin Wharmby modified this statement as he observed:

> *'we often don't know, [who the] end user person is, so we probably quite often are listening very hard to the client, which is probably a big mistake if they haven't got it right'* (Wharmby, personal interview, 15.06.1998).

Or the problem may become harder still if:

> *'there is no typical consumer'* (Rhodes, personal interview, 02.06.1998).

So if the designers found it difficult to define the 'real consumers' of their work, how did they fill this gap in knowledge? Did they unknowingly replace 'real knowledge' with preferred perceptions that facilitated their proposed solutions? Idealising perceptions of the user in a self-fulfilling cycle? As an imagined end user did their 'ideal user' reflect the designers preferences?

**Question 2.2 Do you have a pre-conceived ideal consumer in mind when you design?**

**If so, can you describe them?**

**If not, how do you formulate your perception of the consumer?**

On reflection, this question could have been simplified to avoid the distraction of a two phase question. In the interview the question was asked and a pause was made between the first half of the question and the second. The first half of the question provided the opportunity to raise the notion of an 'ideal' consumer to see if this was a relevant concept within the

professional context. As the designers did not positively respond to this terminology, or actively challenge its use, the second half of the question was more direct.

Whilst Chris Eckersley reflected that he worked from a comparative assessment based on the price of similar products to the one specified, *'I ... tend to try and place it in terms of the end value of the product'* (Eckersley, personal interview, 10.06.1998). The majority of the responses identified three sources of information, firstly prioritising client information, followed by market research and personal knowledge. These responses illustrated the layering of information and power of external influences within the design process. Many of these influences are anecdotal and based on assumptions, which may be undeclared or unacknowledged, but never the less subtly influence the design process.

However, these priorities are a logical response to commercial criteria when the client commissions the design, is responsible for production and sales and inevitably has specialist knowledge of the company's *'industrial profile. Not just in its size but also whom it perceives its own customer to be'* (Piper, personal interview, 01.06.1998).

But whom did the designer's perceive as the consumers with sufficient spending power to encourage industry to take the risk and move to a more user sensitive approach?

**Question 2.3 In ten year cohorts, e.g. 10 - 20, 20 -30, 30 - 40, etc. estimate the three decades when consumer spending power may be highest?** (3 selections by 10 interviewees represented 30 potential votes.)
The estimated periods of highest 'consumer spending power' were firstly fifty to sixty years, second twenty to thirty years and third, thirty to forty years (figure 25).

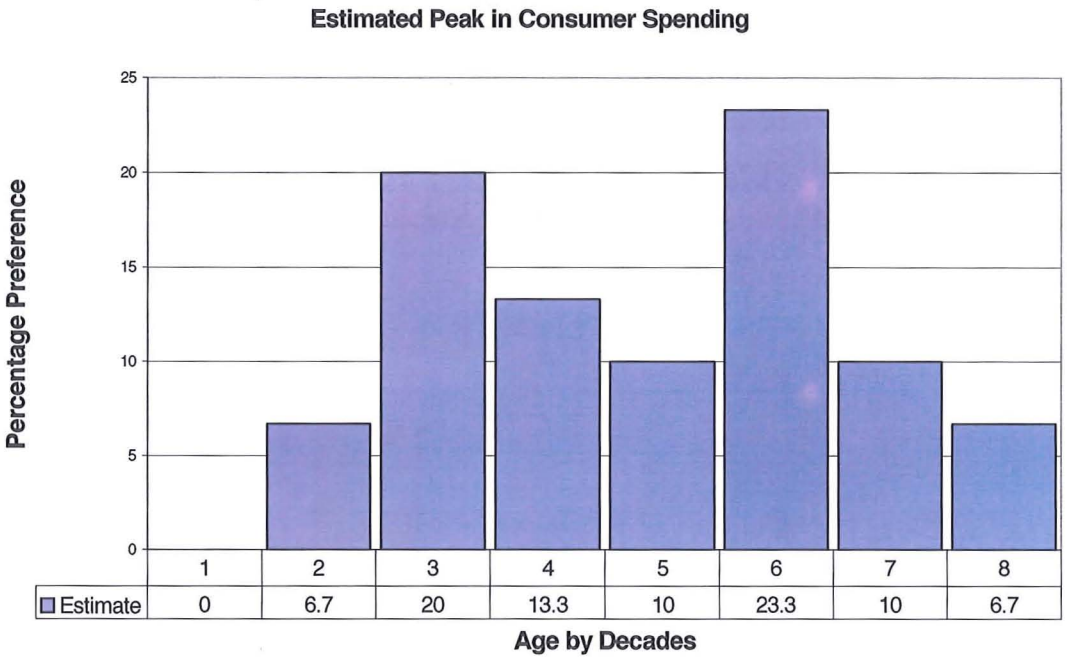
50% of spending power estimated for those aged under 50 years.
40% of spending power estimated for those aged over 50 years.
10% of spending not specified.

Potentially, these estimates represented an interesting reflection of UK society where:

*'people below the age of fifty years do indeed spend more than those above, but they often run into debt to do so'* (Buck, 1990, p.50).

Consumers aged between twenty and forty years, estimated by the designers at 33%, may purchase products for the life cycle demands of first homes and children:

*'20 to 30 is probably pretty high because you are earning money, you probably have independence, ...30 to 40 ... it's not so much that they would be spending money on themselves but if they had a family they would, I think, be spending a lot of money on their kids'* (Piper, personal interview, 01.06.1998).




| Decades | Pass | 0 – 10 | 10 – 20 | 20 – 30 | 30 – 40 | 40 – 50 | 50 – 60 | 60 – 70 | 70+ |
|---|---|---|---|---|---|---|---|---|---|
| Votes | 3 | 0 | 2 | 6 | 4 | 3 | 7 | 3 | 2 |
| Percentage | 10% | 0% | 6.7% | 20% | 13.3% | 10% | 23.3% | 10% | 6.7% |
| Hierarchy | | | | 2nd | 3rd | | 1st | | |

Figure 25: Estimation of the Decades of Maximum Consumer Spending.

If manufacturing and design continue to concentrate on the twenty to forty years segment they may be vulnerable to the double jeopardy of diminishing market size, as the population ages and fertility rates decline, but also to higher recessionary reaction from younger consumers whose spending is dependent on credit. Shrinking markets combined with a credit dependent consumer represents a high-risk strategy for long term growth.

Planning an inclusive, age neutral consumer market makes economic sense when the:

*'Over 55s in general account for one-third of the population, but for more than 60 per cent of all savings'* (Buck, 1990, p.50).

If the savings of consumers post fifty are to be converted into spending power, attention should be focused towards their design interests and preferences. However, did this assume designers perceived consumers post fifty as having sufficient interest in design to justify the attention?

**Question 2.4 In ten year cohorts, estimate the three decades when consumer interest in design may be highest?**

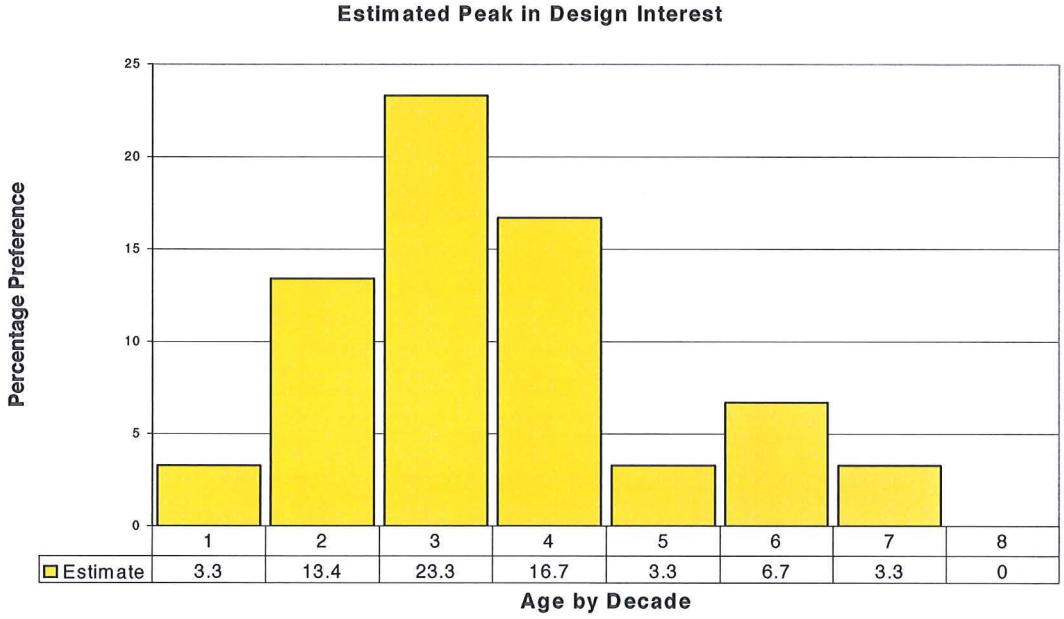
(3 selections by 10 interviewees represented 30 potential votes.)

The estimated periods for highest 'consumer interest in design' were firstly twenty to thirty years, second thirty to forty years and third ten to twenty years.

57% of design interest estimated aged between 10 and 40 years.

13% of design interest estimated for those aged over 40 years.

30% of design interested not specified (figure 26).




| Decades | Pass | 0 – 10 | 10 – 20 | 20 – 30 | 30 – 40 | 40 – 50 | 50 – 60 | 60 – 70 | 70+ |
|---|---|---|---|---|---|---|---|---|---|
| Votes | 9 | 1 | 4 | 7 | 5 | 1 | 2 | 1 | 0 |
| Percentage | 30% | 3.3% | 13.4% | 23.3% | 16.7% | 3.3% | 6.7% | 3.3% | 0% |
| Hierarchy | | | 3rd | 1st | 2nd | | | | |

Figure 26: Estimation of the Decades of Maximum Interest in Design.

Estimated interest in design emphasised the younger age groups and sharply diminished after the age of forty years. Robin Levien proposed:

*'Design is essentially fashion and young people tend to be more interested in fashion than older people, it's very simplistic but that seems to be the case. ... I think it's a basic function of youth needing to differentiate itself from old people, so it's all part of our culture, of rebelliousness and establishing differences'* (Levien, personal interview, 11.06.1998).

If the assumptions through which designers perceive the 'consumer' are questioned, alternative perspectives become viable. Essentially, the investigation proposed if there are formative periods for visual preference, these preferences could offer a bridge between younger designers and consumers post fifty. But did the designers agree with this proposition?

**Question 2.5 Do you think peoples preferences are formed by a certain time in their life and if so when?** (This question was omitted from the pilot interview).

Of the nine responses eight answered yes, and agreed with the proposition. Seven out of eight responses specified the early adult years of late teens, early twenties:

*'Yes, I think there are formative years in anybody's life, they tend to be between teenage and ... mid to late twenties, I would have thought. Yes, when people are becoming consumers and making their own decisions, or wanting to express themselves through how they look and what they buy'* (Levien, personal interview, 11.06.1998).

*'I suspect it's very powerful when you are a teenager, or ten to twenty, must be a very powerful influence'* (Wharmby, personal interview, 15.06.1998).

*'Yes, yes I think they are. I think it's quite difficult for people to change their taste probably past their thirties. So I would say the formative years are probably round about the twenties'* (Grinyer, personal interview, 07.07.1998).

However, this did not discount additional influences or later experience:

*'I think people's preferences are certainly affected by their peers, dominantly by their peers... I think their preferences do change over*

*time, so the priorities they see will change through their life cycle'* (Darbyshire, personal interview, 30.06.1998).

Negative preferences were also noted as important:

*'you tend to dislike the look and feel of the period that you grew up in'* (Amphlett, personal interview, 24.06.1998).

However, Richard Satherley suggested because there were so many potential influences on preference, media, social background, peer groups and income levels, it was impossible to define a single point in life. Perhaps, as the oldest within the group of interviewees, Richard appreciated the value of a lifetime of personal experience. Age and an undiminished interest in design might favour a rejection of a fixed notion of age related to preference and led to the question, how did the designers perceive consumers post fifty?

**Question 2.6 What is your perception of older consumers, over 50?**

Jackie Piper considered:

*'Being old is just later on'* (Piper, personal interview, 01.06.1998),

Robin Levien reflected:

*'ever since I could even think about it was somebody ten years older than me'* (Levien, personal interview, 11.06.1998).

Whilst Martin Wharmby thought:

*'It's quite interesting, I've never thought about it before ... we just don't do that type of work'* (Wharmby, personal interview, 15.06.1998).

A shame perhaps, as Martin Wharmby considered he would favour:

*'less emphasis on pure style more on thinking design. If it is a kitchen gadget, that it really does do its job and does its job beautifully'* (Wharmby, personal interview, 15.06.1998).

This positive assessment of those post fifty was repeated by many of the designers:

*'They were growing up in the sixties, they might have had family commitments but had all that aspiration going on around [them], but perhaps not taking part in it, so they've got this pent up spending power'* (Rhodes, personal interview, 02.06.1998).

*'They are more discerning than a lot of companies give them credit for and I think that they are actually more modern than people give them credit for'* (Amphlett, personal interview, 24.06.1998).

*'They are knowledgeable about themselves ... very set in their ways'* (Dalke, personal interview, 13.07.1998).

*'They will look for different values and they will be less interested in transient values and more interested in permanent values'* (Darbyshire, personal interview, 30.06.1998).

Those post fifty were considered:

*'interesting and not catered for, but also victims of preconceptions'* (Grinyer, personal interview, 07.07.1998).

It was paradoxical that the designers expressed positive attitudes combined with the knowledge that consumers post fifty were also *'victims of preconceptions'* (Grinyer, personal interview, 07.07.1998), when previously they had considered those post fifty as having only 10% 'interest in design' (question 2.4).

Having asked the designers for their perceptions of the consumer, the questions turned to the design process, and the references consulted.

### 4.2.3. VISUAL REFERENCES

**Section 3. Visual references and additional design variables**

3.1 Which visual references do you draw on when researching a design brief? Can you give three examples?
3.2 What additional information might you find useful when assessing consumer needs?
3.3 At what age, might age itself, become a design consideration?
3.4 What considerations do you think might be relevant when designing for an ageing population?
3.5 Would you use any specific visual references if designing for an ageing pop.

Figure 27: Section 3 semi-structured interviews.

The questions in Section 3 (figure 27) considered the information used within the design process and focused on issues directly related to design for an ageing population.

**Question 3.1 Which visual references do you draw on when researching a design brief? Can you give three examples?**

From the responses three categories emerged, firstly, similar and competitor products, secondly, media in general and magazines in particular, and thirdly, observing consumer behaviour and making personal photographic records.

Richard Satherley favoured the first approach and questioned the use of visual references, preferring to prioritise:

> *'competitor research, ... you do competitor evaluation and you emulate what's good from it, or you evaluate whether you want to emulate what's good'* (Satherley, personal interview, 11.06.1998).

For Satherley the important element was to *'differentiate'* the product within the market in an evolutionary approach to product design. Perhaps this approach was particularly appropriate for the high technology medical products designed by Satherley Associates and whilst the emphasis was technological, this did not discount the importance of the visual appearance of products. In addition, this approach presumed the designer had knowledge of alternative design solutions sufficient to differentiate the product in response to the competitors original solution.

The second category referenced magazines and media in general and as Robin Levien observed:

> *'it is interesting to note that you probably look at pictures of other things more than you actually look at other things, so visual research is usually two dimensional rather than three dimensional'* (Levien, personal interview, 11.06.1998).

This questioned the role of the media, magazines and the social context to which they contribute. Those constructing the media environment carry their own perceptions and assumptions, subject to different criteria and value systems. The editorial context conveys authority by selection and transfers authority to the images and products portrayed. Advertising borrows authority by proximity to the 'selected' editorial. Images present time and context and the 'authority' of the media contributes to perceptions of ageing and the appropriateness of the design solutions offered.

The third group of references, those of observation and personal records, was subject to the editorship of the individual and constrained by criteria defined by the requirements of the client. A circular process of reaffirmation might emerge as the client selects the designer and the designer aims to meet the aspirations of the client. As Martin Wharmby observed, designers:

*'would hope to keep very much in touch with what's going on with the market'* (Wharmby, personal interview, 15.06.1998).

In addition to collecting and selecting reference material to differentiate products within the design process, images were used to help define the relationship and vision between client and designer. This process of familiarisation:

*'probably takes up to half of the project time and costs'* (Dalke, personal interview, 13.07.1998).

Although familiarisation time varied, Pauline Amphlett described her job:

*'to make sure that the brand is defined and understood and its personality is understood by the client and then understood by all the different media disciplines who are going to work with that brand'* (personal interview, 24.06.1998).

Amphlett emphasised the need for clarity and understanding between client, designer and target market as essential for success. The role of co-ordinating the disparate elements within the design and manufacturing process may only increase if globalisation of production and markets continues. Previously, an emphasis on reducing production costs moved the point of production away from the western consumer. However:

*'in a consumer driven environment the concept of 'customer driven' logistics is becoming increasingly accepted'* (Waller, 1998, p.5).

It would be ironic, as globalisation of markets potentially moved production closer to the consumer in time and space, if the consumer were to move further, chronologically, from the designer. In an ageing population it will be increasingly important to accurately identify the needs of consumers post fifty to reassert the integrity of the design process.

If references used within the design process have the ability to connect the disparate elements of the supply chain, to create a joint vision of *'value coherence'* (Hatch, 1998, p.16), for this vision to be comprehensive it should acknowledge the emotional values products reflect. Or, as Clive Grinyer speculated, perhaps the emotional values products reflect:

*'would be your reference terms, you would find materials and objects that have the emotional units involved. So the references are actually the emotions'* (Grinyer, personal interview, 07.07.1998).

If products represent emotional values and these are age specific, it would be useful to identify those relating to consumers post fifty and any additional references used to assess consumer needs.

**Question 3.2. What additional information might you find useful when assessing consumer needs?**

Two themes emerged from the response, informal, personal insights from the designer and more formal research from the client.

The designers expressed their personalised efforts to empathise with the consumer, to:

> *'look for that portfolio of things that they want ... rather talk to a few people than survey a thousand with a questionnaire'* (Dalke, personal interview, 13.07.1998).
>
> *'I think it's what they don't say is the most interesting and trying to find out is the most difficult but I think it is a design operation'* (Grinyer, personal interview, 07.07.1998).

If so, why do clients and designers reference market research? Perhaps because market researchers:

> *'have the money and that's a classic misconception, [that] if you have money then you also have knowledge, there is absolutely no reason why you should'* (Wharmby, personal interview, 15.06.1998).

A combination of informal and formal research may be effective in identifying the consumer. However, Martin Darbyshire moved the focus of influence to where the products are purchased by the consumer:

> *'how things are being sold currently is the thing that generally stops design operating to its highest degree'* (personal interview, 30.06.1998).

However effective market research and design knowledge is in identifying the consumer, the numerous variety of sales environments weakens the product identity at the point of sales. Where the product and purchaser meet, many of the efforts to identify and satisfy consumer needs become secondary if:

> *'the selling requirements dominate design'* (Darbyshire, personal interview, 30.06.1998).

In contrast, catalogue, internet or television shopping may overcome many of these problems:

> *'because you can choose the selling environment very closely [associated] to the people you are modelling'* (Darbyshire, personal interview, 30.06.1998),

and thereby reduce the influence of the unknown selling environment on the reception of the designed product. Whilst the internet may bring designer and consumer closer, a series of contextual and cultural filters influence how the designer formulates their perception of consumers post fifty and questions of the relevance of age specific considerations.

**Question 3.3 At what age, might age itself become a design consideration?**

The designers responded that age is consistently a factor but in varying degrees:

> *'I just think it's a matter of common sense and interrogating the brief and actually reading and understanding how things are used'* (Amphlett, personal interview, 24.06.1998).
>
> *'Age links you to a life stage'* (Dalke, personal interview, 13.07.1998).
>
> *'Age is probably the first thing you come to that is always there, it always figures'* (Grinyer, personal interview, 07.07.1998).

If so, how?

**Question 3.4 What considerations do you think might be relevant when designing for an ageing population?**

Six out of ten responses mentioned functional elements of design. Perhaps unconsciously these responses reflected an assumption of declining physical strength and dexterity, prompting design solutions that created:

> *'more of a sense of security than a younger generation might need or might want'* (Eckersley, personal interview, 10.06.1998).

Although Jackie Piper reflected:

> *'people are fitter than they were and living longer ... our expectations are higher so we demand more from products'* (Piper, personal interview, 01.06.1998).

Unfortunately:

> *'the problem is, it always becomes very condescending and bold toy like, big red buttons'* (Grinyer, personal interview, 07.07.1998).

Whilst Clive Grinyer acknowledged the problem Jackie Piper suggested:

*'We need to be kind with the products, ... if all products have a certain generosity then we should all be able to use them'* (personal interview, 01.06.1998).

If taps are difficult to turn, packaging problematic, or controls too delicate, these should be problems for designers and manufacturers, not consumers:

*'because we are so adaptable as humans'* (Piper, personal interview, 01.06.1998)

it may be forgotten:

*'the main consideration might be to not make any allowances at all, ... all you really need to think about is making everything work well and that is an inclusive approach'* (Levien, personal interview, 11.06.1998).

Given a choice, we might all choose products differentiated by their excellence of function as well as their form. However, whilst the designers recognised consumers post fifty as a:

*'group [are] very diverse, but the dominant [considerations] are going to be who they're buying for, ... because they do have the spending power'* (Darbyshire, personal interview, 30.06.1998).

Whether the consumer is the end user, or not, it is insufficient for the functional requirements of an ageing population to be addressed as the priority, whilst the emotional functionality of products remain elusive. If fashionable and functional elements combine to produce products that operate on an emotional level for the young, why not for consumers post fifty? And if so, which visual references might the designer use?

**Question 3.5 Would you use any specific visual references if designing for an ageing population?**

The designers replied no but with reservations:

*'[You] need to research what you need to do'* (Satherley, personal interview, 11.06.1998).

*'You don't really meet the end consumer, you are always dealing with the person who is giving you the job'* (Eckersley, personal interview, 10.06.1998).

*'If anything the difficulty with that group is that the menu palette can become very diverse'* (Darbyshire, personal interview, 30.06.1998).

This section moved from general questions asking for visual references and information used by designers, to a more specific focus asking when the age of the consumer would become an issue. The questions then revisited the influential factors and visual references, only this time specified for consumers post fifty.

The responses initially emphasised products referenced within the general design environment with informal and market research for additional information. When asked what information might be useful to assess consumer needs age was not specified (question 3.2). However, when asked when age might become a consideration (question 3.3) it was consistently identified as a key criterion within design. When asked to define these thoughts with reference to the ageing population (question 3.4), the physical functionality of products was emphasised whilst specific visual references were not considered, unless to express reservations about the diversity of references associated with this group (question 3.5). If identified, knowledge of formative periods for visual preference would help designers understand the preferences of consumers post fifty and perhaps reduce reservations about the diversity of references required to satisfy their needs within all aspects of the production process. After all, diversity in lifestyles *'is largely because they have more disposable income and better health'* (Metz and Underwwod, 2005, p.102).

### 4.2.4. PRODUCTION PROCESS

Section 4 (figure 28) focused on the designer's perceptions of the role of the client and design brief within the design process, the influence of market research and fashion, together with the information included to support design presentations.

**Section 4. Design's position in the production process**

4.1 Who liases with the client in the majority of cases?
4.2 Who sets the design brief in the majority of cases?
4.3 In what form is the design brief given to the designer, verbal, written, other?
4.4 Grade 1 - 5, 1 the highest, the importance of market research to your designing.
4.5 Grade 1 - 5, 1 the highest, the importance of trends / fashion to your designing.
4.6 Who forms the majority of your clients?
Retailers, Manufacturers, Design Companies, Other?
4.7 In what form would you ordinarily present designs to the client?
4.8 Would you include additional information with the designs to support them?

Figure 28: Section 4 semi-structured interviews.

**Question 4.1 Who liases with the client in the majority of cases?**

The designer or the design team met the client:

> *'I have a firm belief that whatever happens in this practice and whatever is the result of our work, is both a combination of people that are involved in the practice as well as our client'* (Satherley, personal interview, 11.06.1998).
>
> *'everybody in the team will have direct contact with the client'* (Levien, personal interview, 11.06.1998).

The only exception appeared to be:

> *'in a consultancy you want someone who can speak the language... generally it seems to be marketing people'* (Piper, personal interview, 01.06.1998).

**Question 4.2 Who sets the design brief in the majority of cases?**

Emphasise was placed on the joint nature of defining the design brief. Although again, in consultancies:

> *'generally it seems to be marketing people'* (Piper, personal interview, 01.06.1998).

Nine of the ten designers considered the brief as an area for discussion and negotiation, even when the client had a brief:

> *'it is rare that one gets a complete brief that doesn't need reworking or reinterpreting or extending in some way'* (Rhodes, personal interview, 02.06.1998).
>
> *'I see my job, really, as to try and help them to define the brief'* (Eckersley, personal interview, 10.06.1998).

This may have been because the clients brief was *'woolly'* (Eckersley, personal interview, 10.06.1998), or that the designer needed to clarify:

> *'how much emphasis we put on this, and is this point really necessary'* (Wharmby, personal interview, 15.06.1998).
>
> *'Most designers will see opportunities not seen before and that's one of the reasons you use designers'* (Grinyer, personal interview, 07.07.1998).

In such negotiations, the role of communication is essential to successfully defining the brief. The brief defines the criteria by which the design solutions are judged, and so its role and application are a vital part of the process.

**Question 4.3 In what form is the design brief given to the designer, verbal, written, or other?**

The responses varied within combinations of oral and written briefs. The development of the brief through negotiation with the design team and the client appeared to favour verbal meetings, from a *'phone call'* (Levien, personal interview, 11.06.1998) to a *'series of interviews'* (Darbyshire, personal interview, 30.06.1998). However, the written element appeared to be utilised for the specifics of the brief from the client, for example Clive Grinyer identified:

> *'basic tactical information, probably basic manufacturing and costings but increasingly customer segmentation'* (personal interview, 07.07.1998).

Whilst Richard Satherley considered the importance of the designer to guide the client's expectations and to avoid misunderstandings:

> *'We professionally put it in writing, because you have to have a milestone, you have to have a benchmark'* (personal interview, 11.06.1998).

The design process, therefore, began within the development of the brief as it defines the criteria and parameters by which the product will be judged. The client as part of the process may contribute market research and trend information:

> *'Any company would have a certain profile, it would have an industrial profile. Not just its size but also who it perceived its own consumer to be'* (Piper, personal interview, 01.06.1998).

But did the designers consider this market research to be important?

**Question 4.4 Grade 1 – 5, 1 the highest, the importance of market research to your designing.** (8 out of 10 interviewees responded specifically). Overall, the responses provided an average of 1.8 for the importance of market research:

> *'when it's available it's very good, yes, but if it's not available, then you know it's intuition, it's common sense, it's logic ... and experience'* (Satherley, personal interview, 11.06.1998).

However, the meaning of market research varied and:

> *'basic market research would be a 4 to 3, real research, user research would be a 1'* (Grinyer, personal interview, 07.07.1998).

**Question 4.5 Grade 1 – 5, 1 the highest, the importance of trends / fashion research to your designing.** (9 out of 10 interviewees responded specifically).

Overall, the responses provided an average of 2.1 for the importance of fashion or trends. The responses were more reserved than those for market research where:

> *'it depends again on a type of product, but certainly it's got to be there somewhere, but it could be very, very slight'* (Wharmby, personal interview, 15.06.1998).
>
> *'For us, general across the board, generalisation, middle'* (Satherley, personal interview, 11.06.1998).

These answers may have been in direct response to the designer's sensitivity to the requirements of their clients, the relevance of research, and fashion or trends to their perceptions of the market so it was important to clarify who were their clients?

**Question 4.6 Who forms the majority of your clients? Retailers, manufacturers, design companies, others?**

The designers stated seventy percent manufacturers, and thirty percent marketing, public relations, distributors, magazines and service industries. The designer, therefore, negotiated between their own perception of design, the consumer and those of the manufacturer. If, in addition to the manufacturer and designer, a wholesaler and retailer were added to the supply chain, it may be unsurprising for perceptions of the consumer to develop into a *'Chinese whisper'* of influences, as each element in the chain attempts to satisfy the perceptions of those either side. An alternative view might interpret these influences as a sophisticated social filter? Depending on the project these perceptions may be inadvertently, or intentionally incorporated into the design solutions presented to the client. But were these influences acknowledged as part of the mix?

**Question 4.7 In what forms would you ordinarily present designs to the client?**

The designers identified two and three-dimensional models, with written and verbal contributions. In addition, Pauline Amphlett of Brand Guardians used music or may:

*'sometimes create fragrances or smells to express ideas'* (personal interview, 24.06.1998).

However, the majority of designers emphasised visuals and models because:

*'people interact in the physical way, they pick them up or they use them in a very one to one physical way, so the sooner you have a three dimensional physical model of it, the more you can understand what that product is all about'* (Levien, personal interview, 11.06.1998).

But did this desire for clarity and communication extend to a willingness to include additional information if it supported the presentation?

**Question 4.8 Would you include additional information with the designs?**

Unanimously the designers answered yes but only if it supported the design:

*'we don't over elaborate for the sake of it, and it's really the other way, it's a question of paring things down as much as possible'* (Levien, personal interview, 11.06.1998).

*'In fact, we might have made the first presentation without showing any design at all, we might say these are your customers, this is what we've found out, these are, we believe, your customers and we'd certainly place the designs in the context of those people and the emotions they will be looking for. So then rather than having a bunch of designs on a table, say pick the most beautiful, we'd say these are the most likely to appeal to the person who is most likely to buy your product ... the design activity is benchmarked to that research'* (Grinyer, personal interview, 07.07.1998).

The additional information was used to cut through the chain of perceptions, to re-establish the link between the product and the end user. However, the selection of potential end users by the designer may inadvertently expose and reinforce the designer's perception of the consumer. The chain of perceptions may break, only to reconnect assumptions and perceptions into a self-fulfilling cycle.

The responses in this section reinforced earlier observations of the potentially closed nature of the design profession and the opportunity for the client-designer relationship to become self confirmatory, rather than

focused on the needs of the consumer (Section 2). For the design process and manufacturing system to meet the demands of an ageing population it is essential to identify accurate perceptions of the consumer. If this is fractured by inaccurate perceptions and fear of ageing, the system and process will become vulnerable as insensitive products prompt decline in sales. The investigation aimed to propose a method to re-establish the intuitive nature of design knowledge, sensitive to the design process and context. For the investigation to be successful it had to address the working methods of designers and their perceptions of the clients-designer relationship. Identifying formative periods for visual preference would contribute to knowledge of real, rather than assumed preferences and enhance the accuracy of methods to meet consumer needs. In turn, a more accurate model of the consumer and design process might enhance the negotiation process within the client-designer relationship.

### 4.2.5. THE DESIGN TOOL

In Section 5 (figure 29) the designers were asked if they thought the design tool might have value and if so, at which point in the design process?

**Section 5. The proposed Design Tool**

The ultimate aim of the research is to propose a Design Tool to access the visual preferences of the over fifty consumers and combine these with other information relevant to this age group, e.g. ergonomic, economic, geographic, relationships to other market sectors, etc.

5.1 Would a tool of this description be a useful design reference?
5.2 At which point might you foresee the proposed design tool being useful?
Overall company planning, Client meetings prior to setting the brief, Design meetings, Design research, Designing, Design evaluation, Client meetings in addition to design proposals, Other?
5.3 The next phase of the research is to conduct a large-scale questionnaire targeted at the over fifty consumer. When all the data has been collated and the design tool proposed may I re-interview you for your opinion at that stage?

Figure 29: Section 5 semi-structured interviews.

**Question 5.1 Would a tool of this description be a useful design reference?**

Five designers thought the design tool a good idea, three thought it had potential and two disagreed. Hilary Dalke did not *'see what's new about it'* (personal interview, 13.07.1998). It was interesting to note Hilary Dalke's reservations as she had been *'tracking the fifty plus market'* (personal interview, 13.07.1998) for a number of years and was herself within the fifty plus age group. However, Hilary's response indicated that experience and knowledge could change perceptions. So in questioning the idea of the

design tool, her response revealed that her personal experience and knowledge had influenced her attitudes and so, perhaps supported the underlying value of a design tool to address these issues.

Robin Levien also had strong reservations:

> *'it would be a good thing to avoid ... I am nervous of the idea of categorising too much and it could provide more limitations than liberation'* (personal interview, 11.06.1998).

These sentiments were valid and important but there could only be limited liberation in continued potential ignorance. It was true that essentially all that may be required to design for an ageing population is a shift in the perceptions of designers about consumers post fifty. Perceptions are as intangible as the informal intuitive knowledge designers use but can be modified by experience and knowledge. Whilst short-term success may limit the perceived need to address these issues, a perception of increasingly insensitive products may force a reassessment of the value of design to satisfy consumer need. A change in the consumer context requires a period of reflection on past practice and recognition of the necessity of new experiences to realign the intuitive informal instincts of designers.

Richard Satherley suggested that it was important for the design tool to include a: *'dynamic'* (Satherley, personal interview, 11.06.1998) element to encourage positive responses:

> *'which can help shape the future in a reasonable and sophisticated way, the opposite of big buttons and big scenes, is I think totally valid'* (Piper, personal interview, 01.06.1998).

**Question 5.2 At which point might you foresee the proposed design tool being useful? Overall company planning, design research, designing, design evaluation, client meetings, other?**

Martin Darbyshire anticipated the aim of the design tool:

> *'It's going to be used at the front to help you plan what you're doing, it's going to be used at the end to help you test and evaluate what you've done against what you understand, because you need to keep developing, it can't be prescriptive'* (personal interview, 30.06.1998).

Whilst Martin Wharmby identified the potential weakness if the tool were restricted to information which may date:

*'If I'd had it for a year, I wouldn't trust it'* (personal interview, 15.06.1998).

The responses made it clear that any proposal would have to prove its value to each of the constituent elements within the production consumption process, consumers, designers and clients.

**Question 5.3 The next phase of the research is to conduct a large-scale questionnaire targeted at the over fifty consumer. When all the data has been collated and the design tool proposed may I re-interview you for your opinion at that stage?**
All of the designers agreed and said they were happy to be re-interviewed.

The final element of the interviews asked the designers if there were anything they would like to ask me? This open question provided an opportunity for the designers to express opinions connected to but not necessarily specific to the questions. The designers were enthusiastic, challenging and supportive of the investigation. All gave their permission to publish and recommended additional contacts and references.

### 4.3.1. REVIEW OF THE INTERVIEWS

The interviews asked questions related to the key issues identified within the investigation;

- identify the age profile of design professionals in relation to the ageing population,
- test the currency of the hypothesis of formative periods for visual preference,
- identify the designers perceptions of consumers in general, and specifically post fifty,
- understand working design methods and the client-designer relationship to
- anticipate the response of design professionals to the proposed design tool.

These issues were investigated because as the population ages, younger designers become increasingly distant from consumers post fifty, not only chronologically but also experientially and this may reduce the sensitivity of intuitive design responses. For example, within the interviews the ill-

defined term, 'older consumer' was intentionally used to identify perceptions of ageing and to see if it was recognised or challenged by the designers. No one questioned the validity of the term even though Hilary Dalke, Richard Satherley, Martin Wharmby and Robin Levien were either aged over fifty and or professionally familiar with the issues relating to design for an ageing population.

As the population shifts from an emphasis on youth to a more mature society, design professionals and the methods they use will evolve to satisfy the needs of manufacturing and the market. Sensitivity to diversity requires intuitive empathy based on well founded knowledge. If products perform roles beyond their simple physical functionality, a diverse consumer market will require a range of solutions to permit expressions of preference and notions of individuality. Acknowledging, understanding and satisfying emotional needs may reveal the *'secret functionality'* (Grinyer, personal interview, 07.07.1998) of products, where style has emotional value beyond a restricted vision of fashion, or allegiance to specific generations. The designers confirmed that if formative periods for visual preferences were identified, the concept had sufficient currency within the design profession to act as a basis from which to plan an age neutral design response.

Knowledge and acceptance of formative periods for visual preference may reduce perceptions of diversity as problematic (Derbyshire, personal interview, 30.06.1998), whilst enhancing the basis from which to negotiate design briefs with clients. If designers can more accurately anticipate consumer preference, they can build a more powerful base from which to propose increased investment in design. Improved design may prompt increased sales and shift the perception of an ageing population to one of positive opportunities for clients, designers and consumers. By asking the designers for their perceptions of the concept of a design tool, which planned to incorporate formative period preference data, three essential elements were identified; firstly, the design tool should not be prescriptive or diminish the role of the designer, secondly, it must be dynamic, and thirdly, that the designers were open and enthusiastic to the concept.

### 4.3.2 RELEVANCE TO DESIGN FOR AN AGEING POPULATION

The visual questionnaire and design tool were proposed to identify visual preferences and a method to address any discrepancy found between the designers and their assumptions of consumer preferences post fifty. In considering these issues a further complicating factor was identified. Whilst not the focus of the investigation the design profession and interview sample were found to be male dominated (question 1.6). As the population ages the consumer context is increasingly female dominated and women in general are increasingly powerful consumers. *'In a recent study conducted by Growth Strategies, American women were found to buy or influence 80% of consumer and business goods and services'* (Eden et al, 2007).

If design responses reflect the designers experience and knowledge of the consumer, the discrepancy between the largely male orientated and 'younger' designers in an ageing population may be problematic. If the experience and knowledge on which designers rely has been consolidated by formative periods for preference, this mismatch between designers and consumers may be hard to bridge. Particularly when the design professionals have such a diverse range of influence, across disciplines, based on personal relationships within small working groups. Small groups may insulate their members from broader external influences and unconsciously confirm each other's social expectations of the consumer as they strive to define cohesive design responses. These observations were confirmed by the designers who specified prioritising client information, followed by market research and personal knowledge when formulating perceptions of the consumer (question 2.2).

By prioritising criteria based on client and market research, the designers relied on secondary sources and past experience. Logically, such an approach favours an evolutionary approach as each new design solution 'evolves' in response to its predecessor, and the designers past experience. In a stable market an evolutionary approach combines the benefits of relative predictability, whilst reducing the risk from including elements unspecified by the client or market research.

However, in a market where the consumer profile is changing, or where a new consumer type or sector is identified, an evolutionary approach is less viable.

The designer's perception of the consumer becomes increasingly important, as Martin Darbyshire noted, the designers' knowledge might not be:

> *'formalised and qualitative ... but it is informed, based upon knowledge that's compiled experience, so it's not entirely raw instinct, it's informed instinct'* (personal interview, 30.06.1998).

However, if the designer's perceptions and knowledge were *'informed instinct'* and difficult to define they might be difficult to quantify, or defend within the mix of more evidence based client and market research (Dong and Clarkson, 2007).

An alternative perspective to informal combinations and prioritisation of information and, perhaps, as an insurance against the potential complacency of the evolutionary approach to product development was the movement described by Clive Grinyer:

> *'towards segmentation, where you might have one core product on the inside that is presented in a number of different ways, from hardware to software to suit different users'* (personal interview, 07.07.1998).

In this scenario the designer perceived their role: *'as the identifiers and then the champions of those different people'* (Grinyer, personal interview, 07.07.1998). Combining the benefits of past experience with the desire for variety with an increasingly diverse consumer population. Mass customisation *'is a response to greater competition in global markets and is seen as a way of providing product differentiation and competitive advantage'* (Metz and Underwood, 2005, p. 79).

> *'Mass customisation puts increasing emphasis on the skills of the designer, connecting him or her firmly to what is taking place in marketing and manufacturing in a much more fluid way'* (Marsh, 1997, p.37).

And conversely in an ageing population, increasing the risk to industry if the designer is chronologically and perceptually distant from the financially secure consumer market post fifty.

This risk was highlighted by the designers estimates of interest in design in relation to consumer age (question 2.4). The designers assumed that 60% of design interest was associated with those aged between 10 and 40 years, compared to only 10% for those aged over 50 years (30% remained unspecified). It is interesting to consider that the post-war generations,

which have been responsible for establishing these assumptions, are now members of the fifty plus population. Why should interest in design diminish with age? Would it be reasonable to assume that if consumers wanted to differentiate themselves in their youth, in later life they would wish to choose between looking like their twenty five-year-old children, or their eighty year-old parents? Or is it possible that:

> *'the word design has a different meaning with every one of those cohorts'* (Dalke, personal interview, 13.07.1998),

or perhaps, that people are not:

> *'really interested in design. They need to have it shown to them. It's like most things, you need to lead them and explain to them, ... the major problem with everything in life is lack of communication'* (Satherley, personal interview, 11.06.1998).

Whether lack of interest, understanding or communication, reduction of design consideration post forty years may encourage consumers to loose the consumption habit and adopt non-purchase behaviour. A limited choice of products, which in design display the assumed preferences of the over forties, will continuously reinforce negative purchase experiences for consumers post fifty. Preference can not be expressed without access to choice, if choice is denied consumption may decline. This is especially so, if the design of the consuming environment and associated advertising constantly reinforces negative experience by compounding the emphasis on idealised images of youth, often at the expense of consumers post fifty. These perceptions were confirmed by Age Concern (2010), who cited research by ICM (2009), stating 57 per cent of consumers post fifty believe business ignores 'older' consumers in favour of appealing to a 'youth' market. Whilst 50 per cent find advertising and marketing targeted at 'older' people to be patronising and stereotypical (Age Concern, 2010).

In a consumer society the question arises, do consumers post fifty actively choose not to purchase and therefore, effectively opt out of the social consuming context? Or, does the dominance of youth orientated products, advertising and sales environments deny those post fifty the opportunity to express a preference by the act of consumption? Personal beliefs held by younger designers about older consumers, combined with market

information may have been successful when applied to youth markets but may be less successful if applied to an ageing population.

Whilst the designers accurately estimated the economic power of consumers post fifty at 40%, representing around £250 billion annually (ONS, 2008, p. 130), their estimate of the 'interest in design' post fifty was limited to 10%. This imbalance within assumptions of the nature of the market and design questioned assumptions of the ageing population and the relationship to design, for example:

- Design for need assumes that design attempts to satisfy 'need' (Fry, 1992). If the years post fifty are assumed to represent a time of decline in physical strength it increases the 'need' for functional design. If so, it might be assumed that 'interest in design' for functional needs will increase with age, prompting greater perceived value for functional design over fashionable styling as in Inclusive Design.
- Design as fashion was assumed to prioritise styling for a youth orientated consumer market (Levien, personal interview, 11.06.1998). A broader perception of design, fashion and what constitutes functionality might prompt a broader vision of the criteria and market by which they were valued (Pullin, 2009, p.15).
- Design as a function of the economic system assumes an interest in satisfying, or at least following economically viable markets. As those aged over fifty-five have over 60% of savings (Buck, 1990, p.50) and a total net financial wealth of over £560 billion, probably 85 per cent of all such wealth (Metz and Underwood, 2005, p.21); the market post fifty represents an attractive economic prospect.

In comparison to this economic potential the designers general assumptions of interest in design by consumers post fifty was limited. However, when asked for their specific considerations responses were more positive. For example, the values associated with those post fifty might be *'less transient'* (Darbyshire, personal interview, 30.06.1998) than those generally considered important within a youth orientated design process. This approach might appear logical if design were considered a fashion driven industry associated with youth (Levien, personal interview, 11.06.1998, Question 2.4). The paradox within these reflections was that if

those qualities associated with consumers post fifty, *'discerning'* (Amphlett, personal interview, 24.06.1998), *'knowledgeable'* (Dalke, personal interview, 13.07.1998) and *'interested in permanent values'* (Darbyshire, personal interview, 30.06.1998), were considered as positive contributions and incorporated into fashionable products, an age neutral approach might naturally emerge.

Perhaps an emphasis on youth markets, where the consumer might be assumed to be most adaptive and, therefore, less critical of limited design responses, allowed the association of design with fashion and transient values to develop. Fashion relies on intimate knowledge of and sensitivity to its consumers and need not equate to poor quality. An age neutral approach might incorporate the best elements from both scenarios, sensitivity to the consumer from knowledge of a more inclusive notion of fashion and quality in design from those positive attributes associated with perceptions of consumers post fifty. Age neutral does not equate to ignoring the activities usually associated with particular moments of life that are used by marketing to segment the population; setting up home, having children, children leaving home, retirements, etc. Rather, age neutral acknowledges that many of the cultural assumptions associated with simplistic concepts of life stages, have been superseded by more flexible concepts of life style, that are free from age related assumptions. Age neutral acknowledges that these moments are no longer fixed to specific age defined life stages, or chronological progression, as the range of life experiences has increased in parallel with wealth, health and life expectancy. Removing 'age' from design criteria acknowledges and neutralises the potential of prejudicial responses to infuse the design process and the products produced, if based on unchallenged negative assumptions associated with ageing. An age neutral design approach rejects the notion that style and function can be traded in favour of design processes and products that incorporate a wider view of emotional and physical functionality within the consumer environment.

The paradoxes of ageing include the conflicting associations of wisdom and authority, contrasting decline and dependency, against power from accumulated wealth and vulnerability from poverty. These paradoxical perceptions reflect the polarised nature of saving amongst the over 50s

(Buck, 1990, p.50). Whilst the responses identified a respectful distance, illustrated by the use of terminology such as between 'them' and 'us', rather than knowledge based on experience and reflected by statements including 'we'. Similarly, it was interesting that the terminology used in question 2.6, 'older consumers, over fifty', was not challenged. Or any mention made that consumers post fifty years represent a diverse group that could be subdivided by any number of defining characteristics other than age (Metz and Underwood, 2005, p.61).

If as Friedman proposes, designers are thinkers *'whose job it is to move thought to action'* (2000, p.9 and 10), the perceptions and actions of designers have direct consequences for consumers. From the responses to questions in Section 2, *Perceptions of the Consumer,* the designers considered the *'consumers'* of their designs to be clients or end users. When asked for sources of information about consumers the designers referenced clients, market research and personal perceptions. From these perceptions a potentially closed network of influences from client, client driven market research and personal perceptions from within the design industry influence the criteria against which designs are assessed. The potential for these influences to be damaging was revealed by the estimations for spending power, where 40% was estimated post fifty years, compared to only 10% interest in design for the same age group.

However, if an interest in design from consumers post fifty was identified to be as strong as their spending power would the designers reconsider their perceptions? This question was particularly pertinent as when asked to consider 'older' consumers, the designers perceptions were positive. In addition, the designers strongly agreed with the hypothesis of formative periods for visual preference, so it may be reasonable to assume that if formative periods were identified designers might respond positively to using this information within the design process to meet consumer needs. However, when asked if they would use any specific visual references if designing for an ageing population (question 3.5), the designers replied no, with the reservation that *'if anything the difficulty with that group is that the menu palette can become very diverse'* (Darbyshire, personal interview, 30.06.1998).

Diversity is only problematic if it remains unknown and ill defined, rather than an opportunity created from *'increased disposable income and better health'* (Metz and Underwood, 2005, p.102). The general population has always been considered diverse and perceived as manageable by imposing various methods of categorisations and segmentations. Perhaps diversity is considered problematic because *'age is probably the first thing you come to that is always there'* (Grinyer, personal interview, 07.07.1998). Even though *'age is becoming increasingly irrelevant as a targeting tool, because people from the same age can have widely different approaches to life'* (Metz and Underwood, 2005, p.61). If 'age' is always there and ageing is associated with negative perceptions, diversity merely complicates an already negative scenario. In a positive perception of ageing as an opportunity, diversity offers numerous avenues to success.

As the spending power of the youth market diminishes, relative to the asset rich over fifties, a youth orientated market may no longer be socially or economically viable. With a positive perception of ageing:

> *'You can make [products] contemporary and still appeal to old people but in an interesting way. ... Tangerine did some extremely interesting work when they did a zimmer-frame and they made it work with wood, ... it was a stylish thing with good emotion'* (Grinyer, personal interview, 07.07.1998).

If emotion is the key and visual preferences are the outward expression of the emotion, then understanding the visual preferences of consumers post fifty provides a means to positively manage the diversity and embrace a broader menu palette to unlock the economic potential within their accumulated *'pent up spending power'* (Rhodes, personal interview, 02.06.1998).

*'Were consumers, post fifty, interested in design?'*

This question was overwhelmingly answered yes. Whatever the detailed analysis might reveal, the 55% U3A response illustrated a high degree of interest in design and a willingness to participate in supporting the investigation. The respondents were highly motivated and this motivation extended to those aged over 75 years, who refused to be excluded and personally added an additional 'seventy five plus' category to the questionnaire response form. The responses were analysed and the findings considered in the order they appeared on the response form.

### 5.1.2. ANALYSIS OF SECTION 1 – YOUR PERSONAL DETAILS

The questionnaire asked the respondents to indicate their age within five non-overlapping categories, evenly distributed from fifty to seventy five years. An additional category of 'seventy five plus' was also included within the analysis in response to questionnaires amended by respondents. These six age based categories became analysis variables (figure 31).

**AGE** - the respondents were unevenly distributed, concentrated between 66 to 75 years. Distribution perhaps reflected membership patterns within the U3A or, alternatively, distribution of interest by those offered the questionnaire. The smallest respondent group, 50 – 55 year olds, included 80 responses, small compared to other categories but without detrimental effects on the significance of the statistical analysis that followed.

| Age of Respondent | Male | Female | Total |
|---|---|---|---|
| Missing | 0 | 8 | 8 |
| 50 – 55 | 13 | 67 | 80 |
| 56 – 60 | 35 | 189 | 224 |
| 61 – 65 | 129 | 539 | 668 |
| 66 – 70 | 205 | 609 | 814 |
| 71 – 75 | 188 | 611 | 799 |
| 76 + | 30 | 75 | 105 |
| Total | 600 | 2098 | 2698 |

Figure 31, Analysis of the Respondent Sample by Age and Sex.

**SEX** - the analysed sample constituted of 600 males (22%) and 2098 females (78% of response). 10 responses were spoilt and excluded.

# CHAPTER 5: THE VISUAL QUESTIONNAIRE.

Following the interviews with design professionals, the second survey focused on identifying the design preferences of consumers post fifty. The survey aimed to identify a statistical association between age and visual preference reflective of a formative period. In addition, the questionnaire aimed to develop the use of visual images in questionnaire methods, identify consumer preference post fifty and present the findings for use as references consulted within design projects. For the findings to be useful in bridging the potential gap in empathy between designers and consumers post fifty, the data had to be transparent and transferable within the terms of the investigation. This chapter considers the statistical 'analysis of the questionnaire' (section 5.1.1) together with further visual analyses, which are contextualised within initial discussions of the findings prior to a 'review of the visual questionnaire' and considered for their relevance for design (section 5.2.1).

### 5.1.1 ANALYSIS OF THE QUESTIONNAIRE

A six week period was allowed for return of the questionnaire response forms from the individual U3A members using prepaid and self addressed envelopes. These forms were collated and scanned, the data transferred into SPSS (Statistical Package for Social Sciences) version 8.0 and coded for analysis. A detailed statistical analysis was completed by Judith Davies and supervised by Dr. John Everatt. (see Appendix for details).

5,000 questionnaires were distributed nationally and 2,772 returned, a 55% response (figure 30).

| | | |
|---|---|---|
| SAMPLE POSTED | 5,000 | 100.00% |
| TOTAL RESPONSE | 2,772 | 55.44% |
| LATE RETURNS | 64 | 01.28% |
| SCANNED RETUNS | 2,708 | 54.16% |
| EXCLUDED RETURNS | 10 | 00.20% |
| ANALYSED RETUNS | 2,698 | 53.96% |

Figure 30, Review of Response Form

The response to the questionnaire answered the first question posed in the rationale (section 3.2.2):

Where individual elements of the questionnaire were left unanswered, these entries were listed as 'missing'. Significantly more females than males responded. As product design is a predominately male dominated profession this response challenged negative assumptions of lack of interest in design post forty (Section 4.2.2, question 2.4) but also identified a significant female interest in design.

**POSTCODE** - ACORN required 2,000 postcodes for the analysis to validate the survey sample. 2,442 questionnaire response forms were scanned into SPSS. The postcodes were isolated and sent on disk to CACI Information Services for analysis.

Using the ACORN system, the population of the U.K. was mapped to identify the proportion of each 'category' within the population. These percentages were compared to the distribution of the categories within the U3A questionnaire sample (figure 32).

| ACORN Categories | U. K. Population. | U3A Sample | Difference |
|---|---|---|---|
| A: THRIVING | 19.8% | 43.8% | + 24.0% |
| B: EXPANDING | 11.6% | 10.8% | - 0.8% |
| C: RISING | 7.8% | 6.4% | - 1.4% |
| D: SETTLING | 24.0% | 25.5% | + 1.5% |
| E: ASPIRING | 13.7% | 7.9% | - 5.8% |
| F: STRIVING | 22.6% | 4.4% | - 18.2% |
| U: UNCLASSIFIED | 0.5% | 1.2% | + 0.7% |

ACORN Categories:
A: THRIVING – *'the people established at the top of the social ladder – healthy, wealthy and confident consumers'* (CACI 1997, p.10).
B: EXPANDING – *'business people in better-off families – paying off mortgages and bringing up children'* (CACI 1997, p.21).
C: RISING – *'the young professionals and executives in towns and cities – working and studying to make their way up the career ladder'* (CACI 1997, p.28).
D: SETTLING – *'the workers in the middle of their social spectrum – they have their homes and lead a steady lifestyle'* (CACI 1997, p. 39).
E: ASPIRING – *'the people who are running hard to better their lot – buying their council homes and pursuing their goals'* (CACI 1997, p.47).
F: STRIVING – *'the people who find life toughest – in the most difficult social conditions overall'* (CACI 1997, p.53).

Figure 32, Comparison between United Kingdom Population & U3A Sample.

A summary of the postcode analysis (figure 32) indicated the sample population was wealthier than the average U.K. population. Specifically, 43.8% of the U3A sample were within ACORN's category: *'A: Thriving - the*

*people established at the top of the social ladder – healthy, wealthy and confident consumers'* (CACI, 1997, p.10), compared to 20% within the population in general. Whilst only 4.4% of the U3A sample were within ACORN's category: *'F: Striving - the people who find life toughest – in the most difficult social conditions overall'* (CACI, 1997, p.53), 18% below the U.K. average. Overall, 80.1% of the sample were distributed within ACORN categories A, B and D (figure 32), all relatively wealthy homeowners. The analysis validated the sample within the terms of the research and as a potentially lucrative consumer group for design.

By extending the analysis within the ACORN classification system a detailed overview for each consumer type was available, including demographic, socio-economic profiles, housing, food and drink, durables, financial, media, leisure and attitude information. In addition, greater detail could be obtained from CACI for specific purposes, for example: *'Investor* ACORN to identify the people most likely to buy high value products'* (CACI, 1997, p.6). Such information could help designers to understand consumers post fifty. As knowledge and empathy increased, inclusive criteria might become more easily incorporated into the design process.

The ACORN classification offered a systematic approach to understanding and overcoming perceptions of the *'older consumer'* as potentially difficult to design for because their: *'menu palette can become very diverse'* (Darbyshire, personal interview, 30.06.1998). By challenging perceptions of consumers post fifty as an homogenous mass, fears of diversity may shift to ideas of opportunity. Stereotypically negative assumptions about the ageing population may be replaced by positive images of a diverse consumer group, with financial power and a strong interest in design.

By combining ACORN data with the questionnaire findings designers could provide quantitative data to support the qualitative elements within their design decisions. Providing clients with numerically based evidence to support visual preferences reflecting emotional responses may shift the balance of influence, from marketing leading design decisions by quantifying the market, to designers using market data to empathise with and focus on consumer needs (Brown, 2007).

### 5.1.3 ANALYSIS OF SECTION 2 – VISUAL PREFERENCE

Section 2 of the visual questionnaire offered fourteen categories of products and interior environments, for each category one product represented each decade of design, 1930 to 1990. For each product category respondents were asked to express their preference by selecting the product they most 'liked', most 'disliked' and neither liked or disliked, their 'neutral' preference. Tabulated analysis of the findings, with graphic illustrations are included as an appendix with a glossary of key terms. A summary of the results is presented here and cross-referenced to the appendix to support specific details of the analysis.

The 55% questionnaire response validated the design of the visual question and fell well within the estimated response of between 42.8% and 57.2% predicted by the pre-questionnaire design phase (figure 17). The response overwhelmingly answered yes to the first question posed by the questionnaire, *'were consumers post fifty interested in design?'* (Section 3.2.1)

The response to the questionnaire was excellent and challenged earlier doubts expressed at the Matrix Conference that 'older' consumers might be either unable to, or uninterested in completing the questionnaire (Section 3.2.6).

Analysis of the visual findings considered the second and third issues identified in the design phase, *'Was there a difference in visual preference based on sex?'* and *'Was there a difference in visual preference based on age?'* Analysis of these issues via visual images was central to the investigation for two reasons. Firstly, the value of the visual element of the questionnaire rested on its ability to provide an innovative addition to questionnaire methods, to access information that would otherwise remain obscured within the translation between visual and verbal communication of preferences within the consumer and to the designer. Secondly, if preference is related to age and sex this questioned the validity of negative age related assumptions held by a design profession that is chronologically and sexually distanced from an increasingly female dominated ageing population. Especially as this population have sufficient wealth and interest in design to represent a significant consumer group. If the analysis found

that visual preference was related to a particular time in early life and this influence continues to inform preference through life, these findings would question whether this visually sensitive time is indicative of a formative period.

The size of the posting and visual nature of the questionnaire provided opportunities for both quantitative and qualitative analysis. Quantitative analysis looked for a significant statistical association and so it was important to clarify the meaning of 'statistical significance'. *'Statistical significance indicates whether the relationship is large enough for us to consider there to be some level of correspondence between the two variables'* (Davies, 2000, see appendix). A 'statistically significant' result might not in itself be evidence that the *'relationship'* was significant enough to use as the basis for action in the real world. It was, therefore, insufficient to use 'statistical significance' as the only measure of analysis. Further consideration of the visual nature of the data was essential.

The investigation therefore looked for additional trends that had not been anticipated. It was important to be open to evidence to support the hypothesis of formative periods, but equally so to consider evidence that might challenge the hypothesis, or identify alternative associations within the expressions of visual preference.

Whilst the scale of the responses and the data generated suggested the value of a statistical analysis to identify major trends, it was important to remember the aims and context within which the questionnaire originated. Quantitative tools generate quantitative measures. These measures were appropriate to identify statistical associations between age and preference but the broader aims of the investigation proposed an emotional utility from the visual appearance of products. These aims required quantitative analysis of responses to individual products and qualitative analysis of the data directly considered against the visual images in the questionnaire. The effectiveness of comparing the quantitative analysis of the responses, against the qualitative analysis of the visual images, also allowed consideration of the value of direct transfer of the images in to design practice. The analysis began by asking, *'Was there a difference in visual preference based on sex?'* (section 3.2.1).

The initial statistical analysis looked for 'the effects of age and sex across all products' and indicated little evidence of an effect of sex. Although significantly more females to males responded to the questionnaire, their responses did not indicate that visual preference was differentiated by sex.

Based on these results the analysis addressed the third question, *'Was there a difference in visual preference based on age?'* (Section 3.2.1).

This analysis focused on 'the effects of age on each product category'. Each product category was analysed, for 'like', 'dislike' and 'neutral' responses to assess the relationship with the respondents' age (appendix figures 4 – 31, for details of each product category in tabular and graphic forms).

**Analysis of 'liked' selections** indicated a small 'statistically significant' effect of age but no evidence of an effect of gender or an interaction between age and gender. The analysis suggested preference varied for each age group with a trend for 'older' respondents to prefer products from the earlier decades (appendix figure 1).

**Analysis of 'disliked' selections** indicated a small 'statistically significant' effect of age but no evidence of an effect of gender or an interaction between age and gender. The analysis indicated a trend for 'older' respondents to dislike more contemporary products, compared to 'younger' respondents. However, compared to the 'liked' responses, the trend within the 'disliked' selections was less consistent across all product types (appendix figure 2).

**Analysis of 'neutral' selections** again indicated a 'significant' effect of age, however, this effect was much smaller than that for the previous two analyses. Consistent with the 'like' and 'dislike' analyses, there was no evidence of an effect of gender, nor an interaction between age and sex. This analysis suggested that there was only marginal evidence for age group differences in 'neutral' selections. Therefore, the neutral selection was not considered for further analysis of the individual product preference (appendix figure 3).

From a 'statistical significant' perspective an association between age and preference had been established. However, this association was small and considered of limited value within the design context as it did not quantify the relationship, or identify specific times in life as indicative of a formative period. So whilst the initial statistical analysis had indicated a small 'statistical association' between age and preference, it was important to identify the degree of association and determine its 'use' value for design. A method was required to visualise the statistical data that specified and quantified the degree of association between age and visual preference. By translating the findings into a visually accessible form it would be easier to assess their practical value to designers.

Following the initial analysis, three further phases of analysis were completed:

- Firstly, the data was analysed to identify the degree of age related preference for each product, for both 'liked' and 'disliked' preferences (appendix figures 4 –31).
- Secondly, this data was analysed to identify the association between each age category, from 50 – 75 plus and preference located against each product for each decade (appendix figures 32 – 43).
- Thirdly, this data was analysed to identify preference based on all the products by age category against design decade (appendix figures 44 and 45).

Using these analyses the findings were translated into bar charts to illustrate the detail within the data (figures 33 – 38). In the tabulated bar charts the decades are identified by the mid-point of the decade, 1935, 1945, 1955, etc.

**Association between age and design decade for all 'liked' preferences, for all products.** In figure 33;

Each column represents an age group, in chronological order with 50 - 55 years to the left of the graph and moving to 76+ to the right.
The horizontal stripes represent the proportion of preference for each design decade, in chronological order with 1935 at the base, rising to 1995 at the top.
All 14 product categories are included in the analysis.

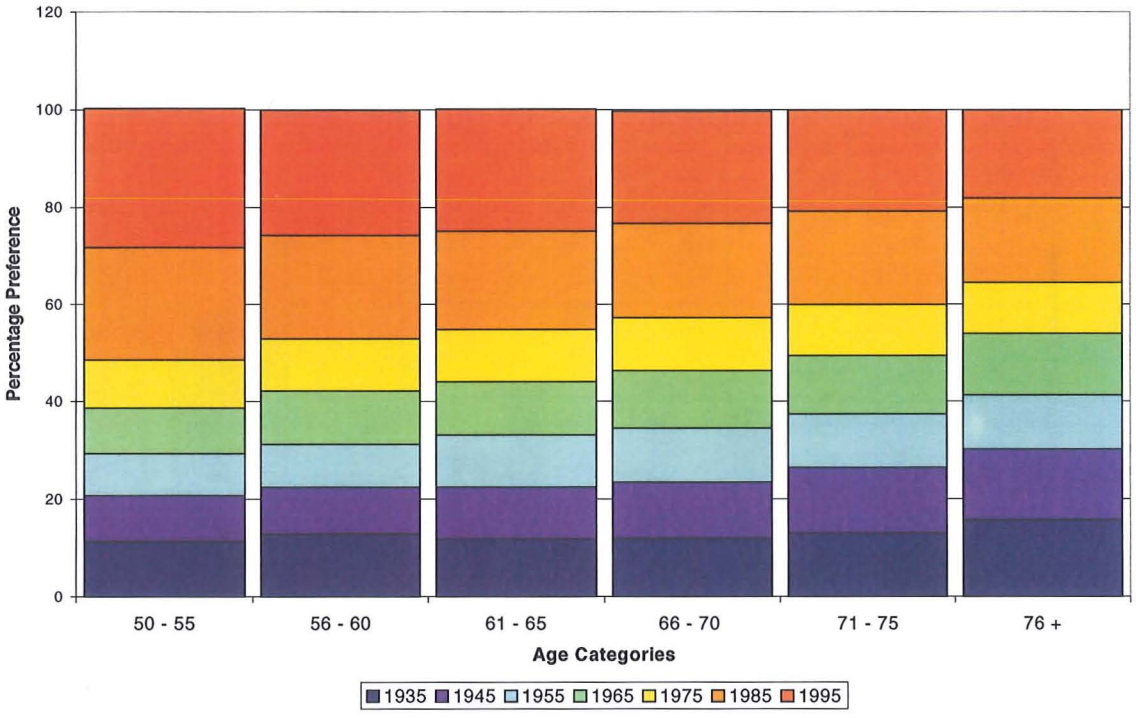



Figure 33, LIKED: Preference Based on all Products By Age Groups.

Figure 33 illustrates the trend for 'older' respondents to prefer 'older' products and to dislike more contemporary products compared to 'younger' respondents. This trend is illustrated by the upward diagonal trend in the horizontal stripes from left to right in the graph (appendix figure 44). The graph illustrates the relationship between age and preference, with the design decades shown as horizontal stripes within each column. The bigger the stripe the greater the preference. However, the distribution of preference between decades was not even, with 1980 and 1990 preferred far more than the other decades. To clarify this relationship, of preference for design decades, the data was reformatted reversing the emphasis to illustrate the association between design decade preferences and age groups for all products (figure 34).

**Association between design decade and age for all 'liked' preferences, for all products.** In figure 34;

Each block of columns represents a design decade, smaller vertical stripes age groups.
The design decade columns are in chronological order, 1935 -1995 from left to right.
The vertical stripes within each column indicate age groups, shown in chronological order, 50 - 55 to 76+ from left to right.
The height of the stripes represents the percentage of 'liked' preferences.

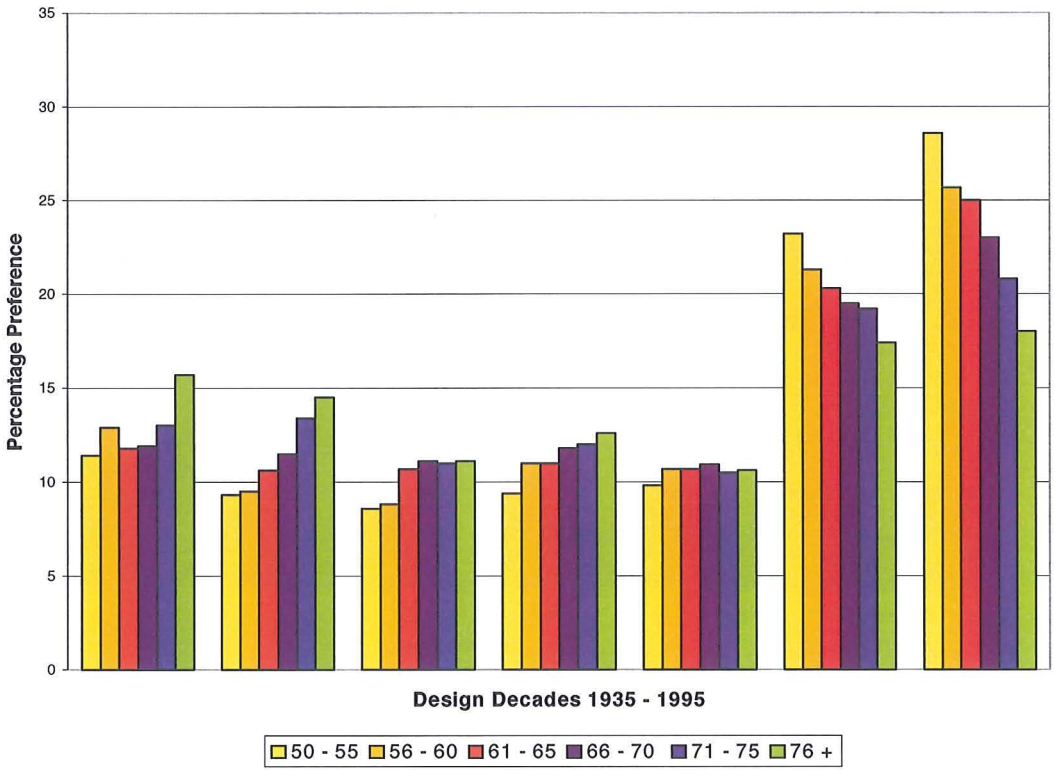



Figure 34, LIKED: Preference for All Products, Design Decades and Age Groups.

Figure 34 indicates an average preference of 23.0% for 1990, 19.8% for 1980 and 12.4% for 1930, or 55.2% of preference defined within the three most popular decades. Each of the other decades achieved between 10.7% and 11.7% of preference. Comparing the data to first identify the relationship between age and preference, and secondly design decade and preference revealed the overall association was greater for the design decades than with the age groups (appendix figure 46). Although there were age related differences within the design decades. For example, in 1930, 40, 50 and 60 preference was stronger the older the respondent, 1970 was similar across all ages, and 1980 and 90 was weakest as the respondents aged. However,

these associations were less distinct then the association with the design decades. The same process was then completed for the 'disliked' selection.

**Association between age and design decade for all 'disliked' preferences, for all products.** In Figure 35;

Each column represents an age group, in chronological order, 50 – 55 years to the left of the graph, moving to 76+ to the right.
The horizontal stripes represent the proportion of preference for each design decade, in chronological order with 1935 at the base, rising to 1995 at the top.
All 14 product categories included in the analysis.

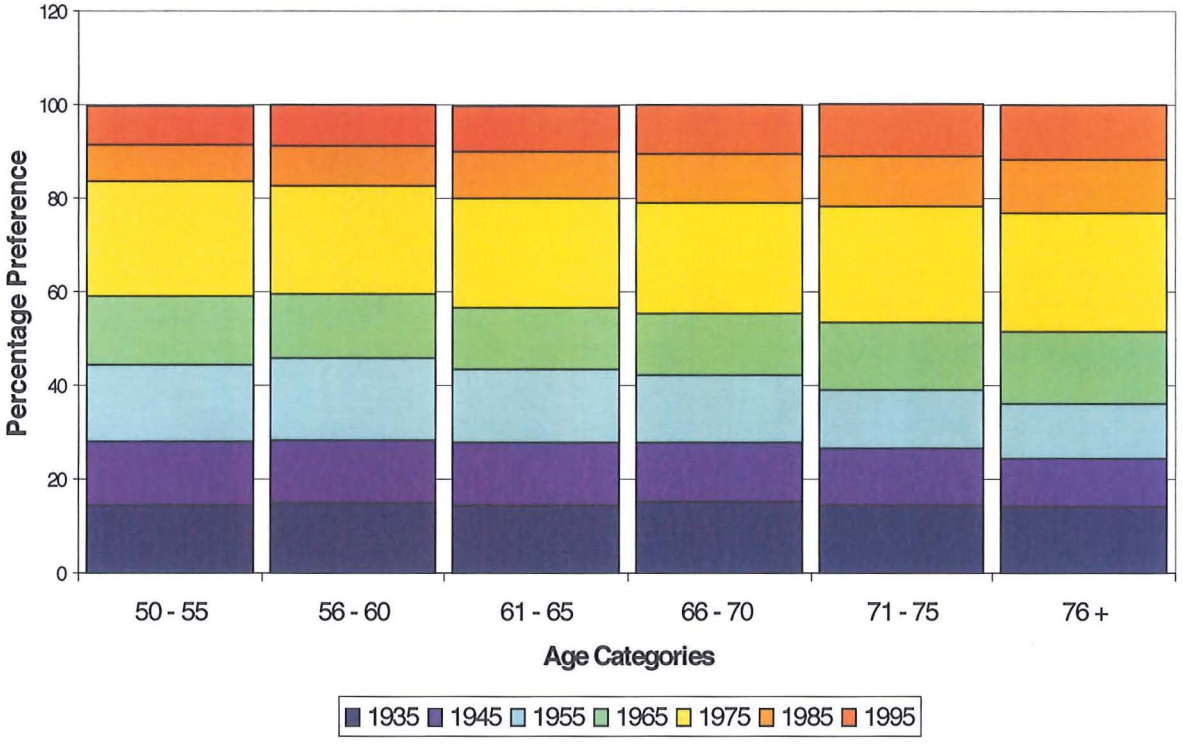



Figure 35, DISLIKED: Preference Based on all Products By Age Groups.

The 'disliked' responses confirmed the findings of the 'liked' selection, with a trend for 'older' respondents to dislike more contemporary products compared to 'younger' respondents. The graph illustrates the trend by a downward diagonal line in the stripes from left to right. However, compared to the 'liked' responses, this trend was less consistent across all product types. Although the design decade 1970 was disproportionately disliked, followed by 1930s and the 1950s (appendix figure 45).

To clarify the relationship to the design decade the data was reformatted (as for the liked selection figure 36).

**Association between design decade and age for all 'disliked' preferences, for all products.** In figure 36;

Each block of columns represents a design decade, smaller vertical stripes age groups.
The design decade columns are in chronological order, 1935 -1995 from left to right.
The vertical stripes within each column indicate age groups, shown in chronological order, 50 - 55 to 76+ from left to right.
The height of the stripes represents the percentage of 'disliked' preferences.

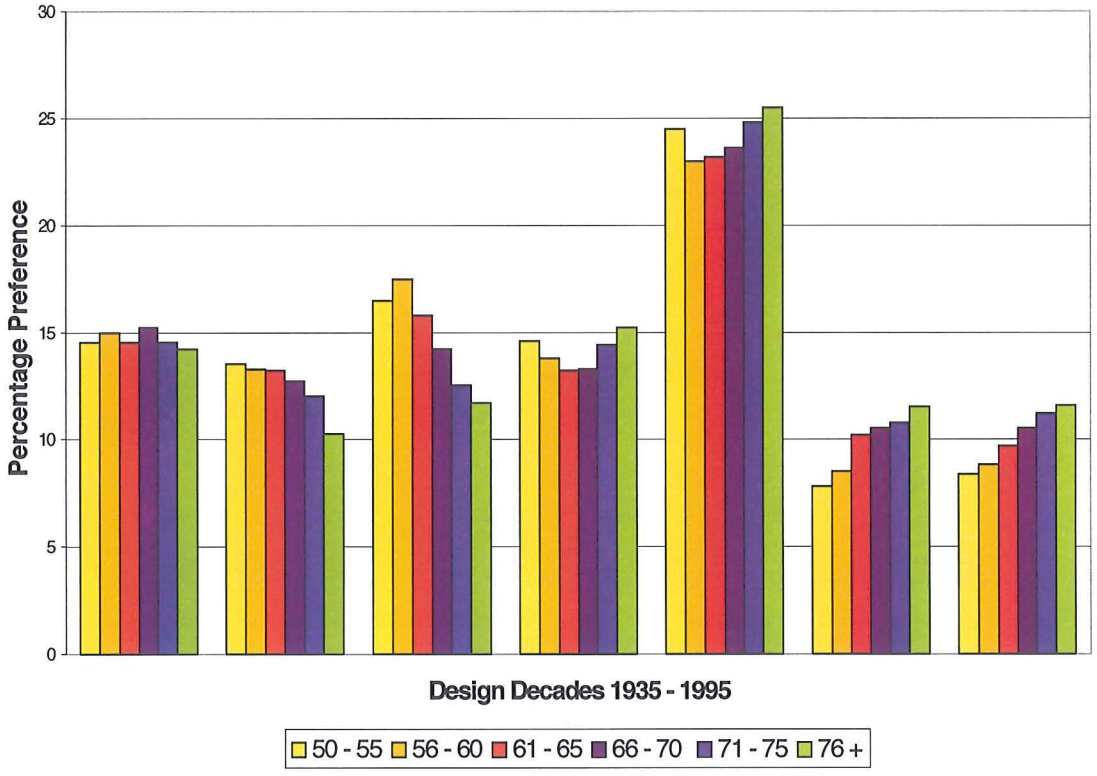



Figure 36, DISLIKED: Preference for All Products, Design Decades & Age Groups.

Figure 36 indicated a strong 23.9% of preference 'dislike' for the design decade 1970 followed by 14.6% for 1950 and 14.3% for 1930, cumulatively 52.8% of the 'disliked' responses located within these three design decades. The other four decades ranged from an average of 10.3% and 10.4% for the 1980s and 1990s and 12.6% and 13.8% for the 1940s and 1960s respectively. The association between age and preference was not as consistent as in the 'liked' selection (appendix figure 47). In 1930, 40 and 50

the trend indicated younger respondents had a stronger dislike for these decades, 1950 and 60 was relatively similar for all ages, and 1980 and 90 indicated greater dislike the older the respondent.

**Overall the analysis of the association between visual preference, age and design decades identified:**

- The tendency for 'older' respondents to prefer 'older' products, although this was more definitive for the 'liked' than 'disliked' selection.
- Preference was associated more with design decades than with the age of the respondents.
- 55.2% of preference for 'liked' selections was located in the first three most highly rated design decades 1990s, 1980s and the 1930s.
- 52.8% of preference for 'disliked' selections was located in the first three most highly rated design decades 1970s, 1950s and the 1930s. The 'disliked' selection illustrated a universal and disproportionate dislike for the design decade 1970 and only 10.3% and 10.4% for the 1980s and 1990s.
- 'Liked' and 'disliked' selections were independent of each other, 1930 appeared in both of the first three highest rated selections, whilst 1960 and 1940 were in the least popular selections in both categories.
- The majority of preference for both 'liked' and 'disliked' selections were associated with the most recent, or contemporary decades, 23.9% disliked 1970, 19.8% liked 1980 and 23.0% liked 1990.

One of the aims of the investigation was to identify evidence suggesting a statistical association between the development of product preference at specific times in life, subsequently expressed through intuitive choice. This association required data from a cross section of product selections. However, the data suggested further trends were apparent and as preference is constructed from a range of variables, the individual product categories offered the opportunity to analyse the responses against individual product characteristics. Analysing individual product forms, rather than decades drawn from a range of product types, identified variations within the image selection to guide future development of the visual questionnaire method.

The analysis established that preferences for both 'liked' and 'disliked' were clustered around particular design decades. To understand the detail within these clusters of preference a further analysis considered the associations between individual product categories and the design decades. A review of the data found 61% – 88% of liked, and 66% - 94% disliked preference was located within the first three selections, figure 37 and 38.

**Association between individual product categories and design decades for 'liked' preferences.** In figure 37;

Vertical columns represent individual products, horizontal stripes design decade preferences.
The colour bands represent the design decades of the 1st, 2nd and 3rd most 'liked' selections. The details of the remaining selections would be divided within the blank space at the top of the columns.

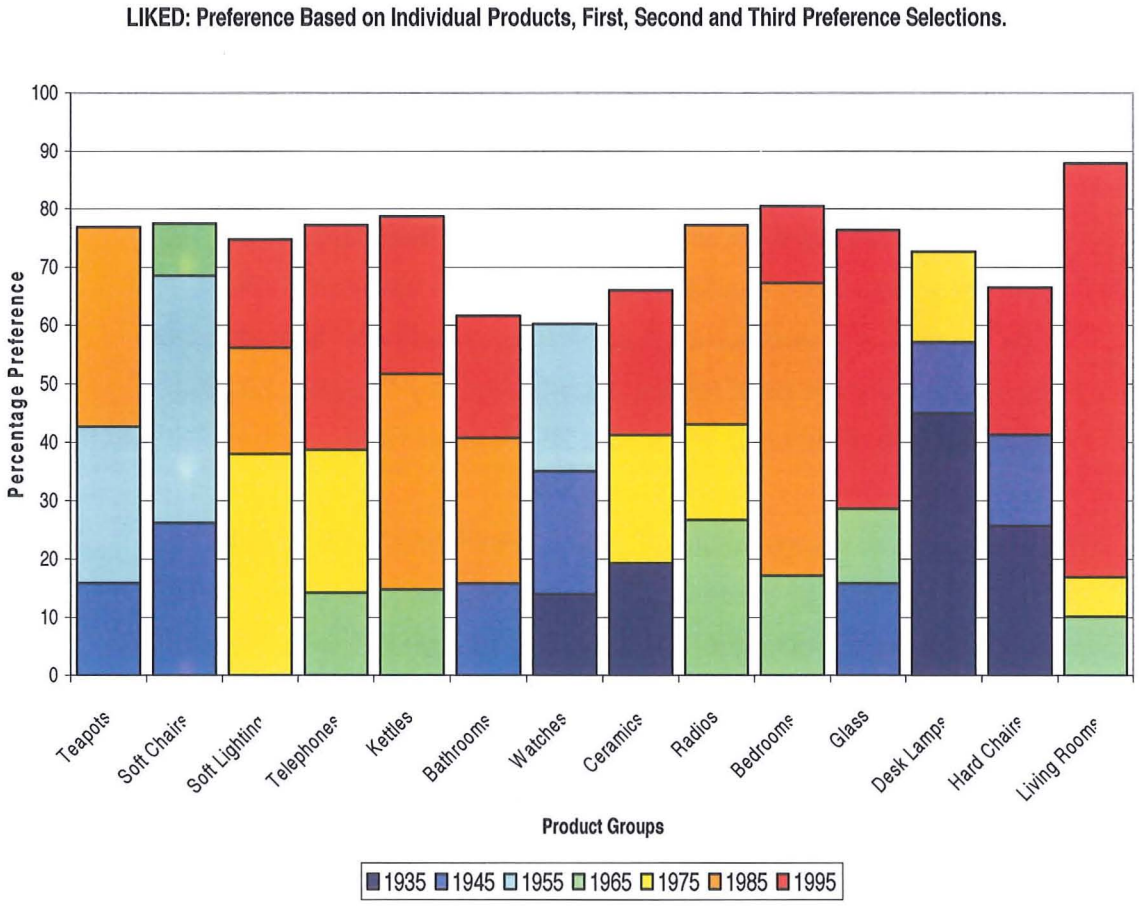



Figure 37, First, Second and Third Most Liked Preference Selections.

Figure 37 indicates an average of 38.5% of preference located in the first selection, 21.1% in the second selection and 14.2% in the third selection. An

average of 73.8% of the responses located within the three most popular design decades selected (appendix figure 48).

Analysis of individual products increased the specificity of the degree of preference identified from 55.2% (figures 33 and 34) for the first three design decades to 73.8% for the first three products selected.

**Association between individual product categories and design decades for 'disliked' preferences.** In figure 38;

Vertical columns represent individual products, horizontal stripes design decade preferences.
The colour bands represent the design decades of the 1st, 2nd and 3rd most 'liked' selections. The details of the remaining selections divided within the blank space at the top of each column.

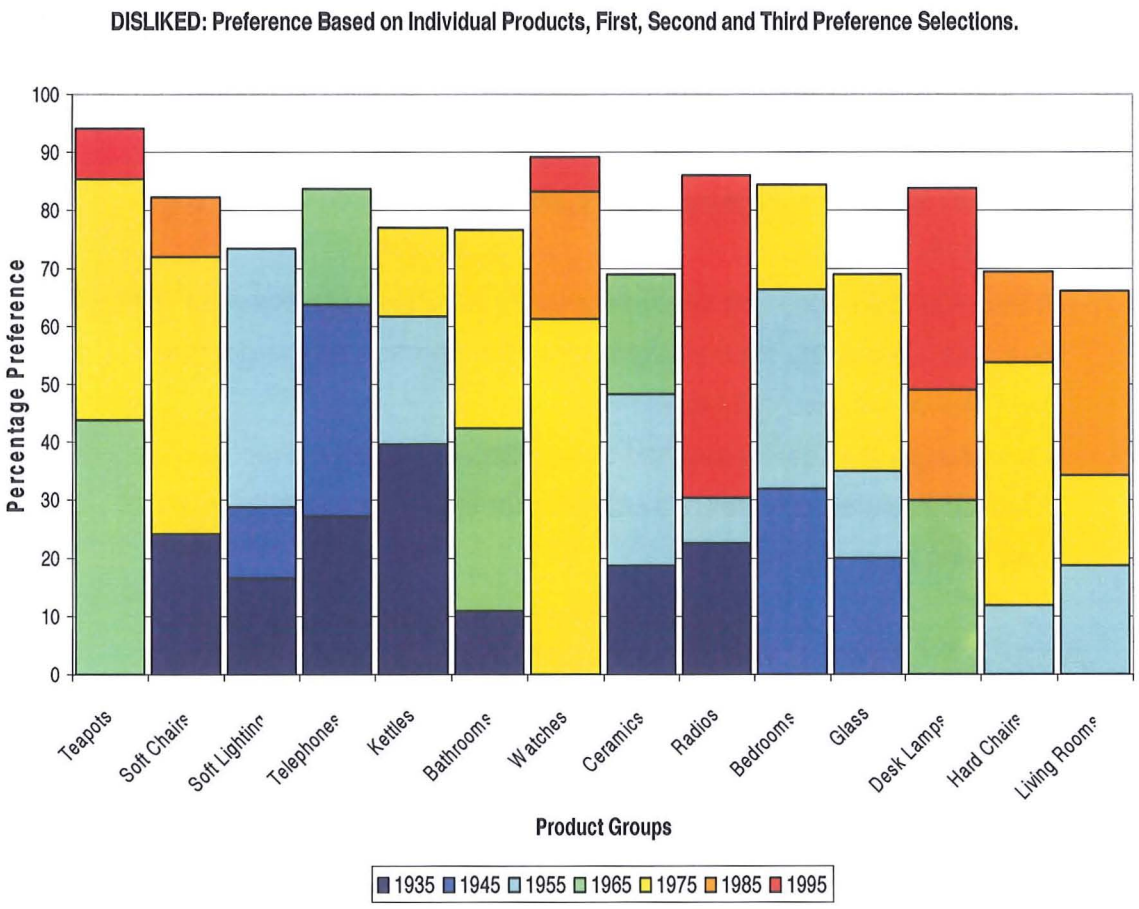



Figure 38, First, Second and Third Most Disliked Preference Selections.

Figure 38 indicates an average of 40.7% of preference located in the first 'disliked' selection, 24.6% in the second and 13.5% in the third selection. An

average of 78.8% of the responses located within the three most unpopular selections (appendix figure 49). Analysis of individual products increased the specificity of the degree of preference identified from 52.8% (figures 35 and 36) for the first three design decades to 78.8% for the first three products selected.

The three most popular selections, for preference based on the analysis of individual products specified between 73.8% for 'liked' and 78.8% for 'disliked' preference. These three preferences were illustrated without the addition of the four smaller preferences, which together shared an average of between 20% and 26% of the selections, identified by the blank space at the top of figures 37 and 38.

**The Association between Product Categories and Design Decades indicated:**

- 73.8% of 'liked' and 78.8% of 'disliked' preference was located in the three most popular selections.
- The percentage preference, for the first three selections, remained relatively constant even though the products, design decades and age groups varied.
- Interesting differences within such consistent trends were apparent, for example 'liked' living rooms illustrated a disproportionately large first selection preference of 71.0%.
- Only four product categories had design decades in both 'liked' and 'disliked' preferences, the third selection for telephones, ceramics, glass and living rooms.

## OVERVIEW OF THE STATISTICAL ANALYSIS

The scale and detail of the response to the questionnaire had established, yes consumers post fifty were interested in design. The statistical analysis then addressed the questions, was there a difference in visual preference based on sex and was there a difference in visual preference based on age?

Although many more females to males completed the questionnaire, the analysis indicated there was little evidence of an effect of sex on visual preference. From the analysis of an effect based on age, of the three questions asked for visual preference, most 'liked', most 'disliked' and

'neutral', small statistically significant relationships were found for each response. The effect for 'neutral' preferences was marginal and so not considered within the further analysis.

Analysis of the 'liked' and 'disliked' preferences identified a small but statistically significant relationship between age and preference. 'Older' respondents tended to prefer older products and this tendency was stronger for 'liked' than 'disliked' selections. However, it did not quantify the relationship and thus clarify its use value to design, or specify times in life as indicative of a formative period. This lack of specificity prompted further analysis, which identified a stronger relationship between the design decades and preference, rather than with age. 23.0% 'liked' the 1990s, 19.8% 'liked' the 1980s and 23.9% 'disliked' the 1970s, with all other decades achieving between 10 – 15% of preferences.

Whilst the trend across the range of products and the relationship to time had been established, the potential for greater specificity prompted analysis of the findings for individual product categories. Analysis of individual product categories found that preference for most 'liked' could be specified to 73.8% and 78.8% for most 'disliked' within the first three most popular selections. Of the fourteen product categories, each with seven images representing the design decades, ten had three images in these first three selections for liked and three for disliked, leaving only one in neither liked or disliked. Variations from this pattern appeared in four product ranges. In addition, there was also a disproportionately large 71.0% 'liked' preference associated with the first choice 1990s living-room. These variations had to be explained to refine the selection of visual images in questionnaire methods.

Similarly, to support the use of visual images in questionnaire methods the visuals had to be considered for the value to analysis and design. To this point the analysis had been purely based on a quantitative perspective. The value of using images was that they also offered the potential for qualitative analysis from a design perspective. To understand the variations identified and to refine the use of visual mages in both the design and analysis of questionnaire methods, the product images were reconsidered against the data from a visual design perspective.

## STATISTICAL ANALYSIS AND VISUAL IMAGES

To understand the implications of the findings in relation to the product images, the images were arranged to reflect the three most 'liked' and 'disliked' selections, following the analysis where individual products identified between 73.8% to 78.8% of preference (figures 37 and 38). The seven images for each product category were arranged from the first, second and third most 'liked' selections and then back through third, second and first most 'disliked' selections. Any products, neither 'liked' nor 'disliked', were considered neutral and located between the third most 'liked' and 'disliked' selections. Of the fourteen product categories:

- Ten product categories were evenly distributed around the seven points of preference, three 'liked', three 'disliked' and one 'neutral,' to form perfect continuums of preference from the seven products in each category. Perfect in the sense that each decade was located in one of the seven positions included within the continuums.
- Four product categories, 'telephones', 'ceramic', 'glass' and 'living rooms' had images selected with both 'liked' and 'disliked' categories, leaving two images within the neutral mid area (figures 39, 40, 41, 42, 43 and 44).

In the appendix the visuals are arranged in groups of first, second and third 'most liked', 'neutral' and third, second and first 'most disliked' (appendix figure 50–56).

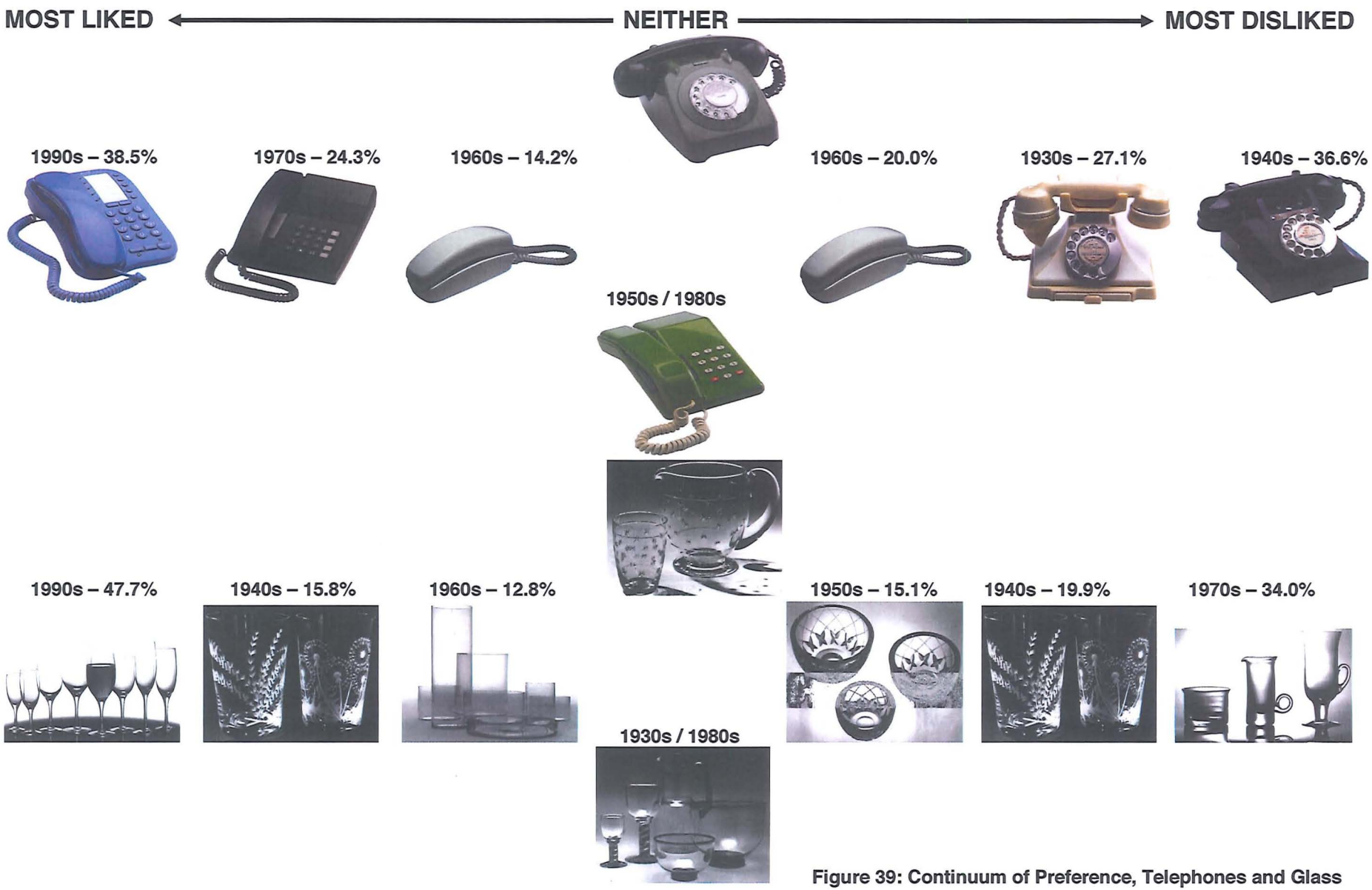



**Figure 39: Continuum of Preference, Telephones and Glass**

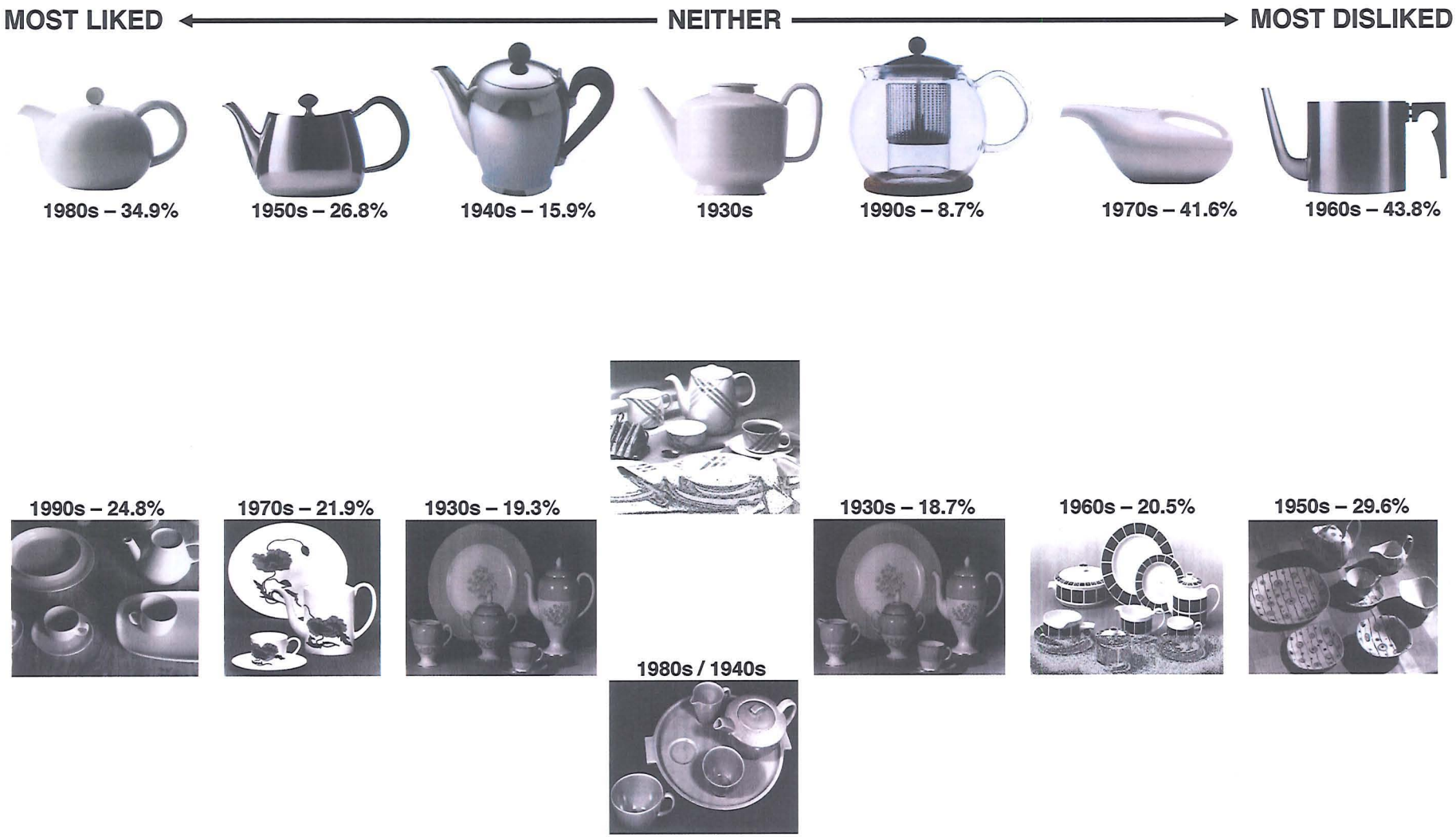



**Figure 40: Continuum of Preference, Teapots and Ceramics**

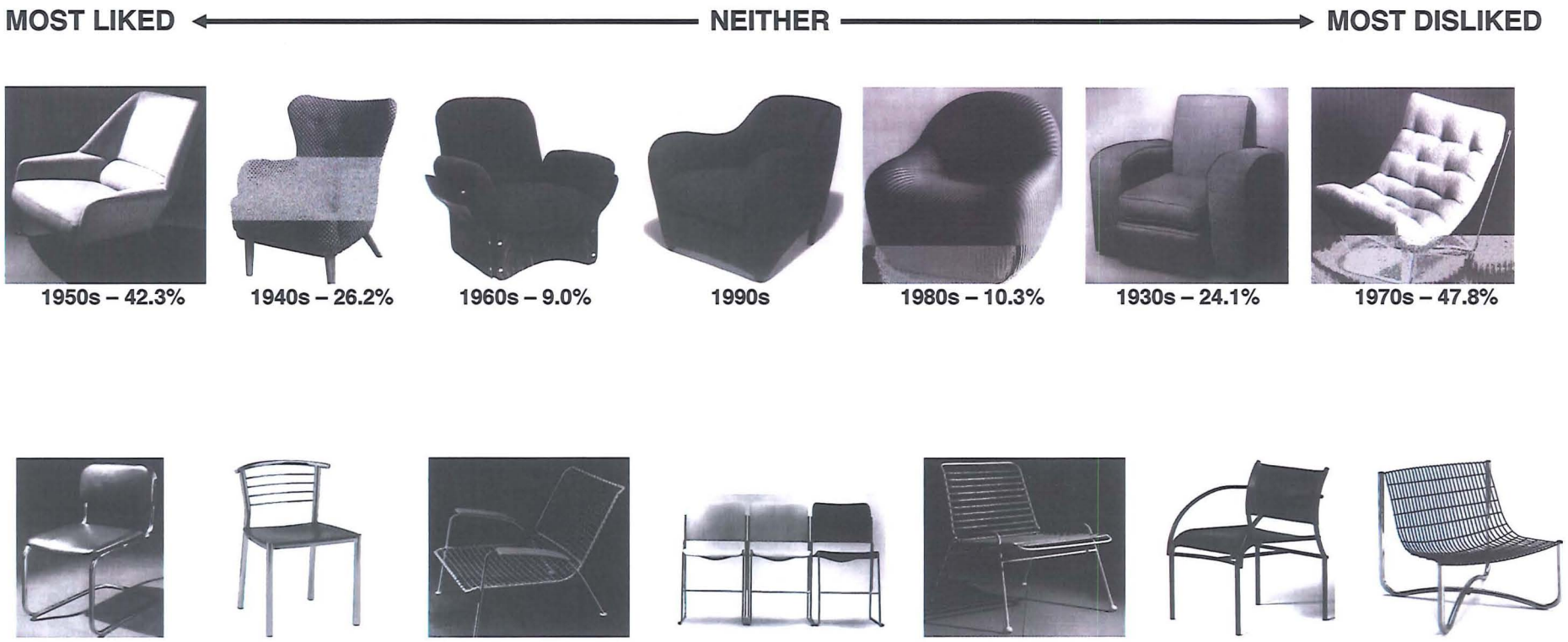



**Figure 41: Continuum of Preference, Soft Chairs and Hard Chairs**

MOST LIKED ← NEITHER → MOST DISLIKED

1930s – 25.6%

1990s – 24.2%

1940s – 15.7%

1960s

1950s – 11.8%

1980s – 15.6%

1970s – 42.0%

1950s – 25.2%

1940s – 21.1%

1930s – 14.9%

1960s

1990s – 6.0%

1980s – 21.9%

1970s – 61.3%

1990s – 71.0%

1960s – 10.1%

1970s – 6.8%

1940s / 1930s

1970s – 15.6%

1950s – 18.7%

1980s – 31.8%

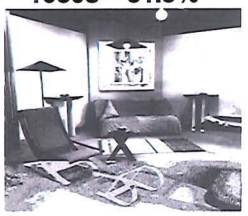


**Figure 42: Continuum of Preference, Watches and Living Rooms**

MOST LIKED ← NEITHER → MOST DISLIKED

1980s – 36.9% | 1990s – 27.0% | 1960s – 14.8% | 1940s | 1970s – 15.3% | 1950s – 22.1% | 1930s – 39.6%

1930s – 44.9% | 1970s – 15.5% | 1940s – 12.2% | 1950s | 1980s – 19.1% | 1960s – 29.9% | 1990s – 34.8%

1980s – 24.9% | 1990s – 20.9% | 1940s – 15.8% | 1950s | 1930s – 10.9% | 1960s – 31.5% | 1970s – 34.2%

**Figure 43: Continuum of Preference, Kettles, Desk Lamps and Bathrooms**

MOST LIKED ← NEITHER → MOST DISLIKED

1980s – 34.2%

1960s – 26.7%

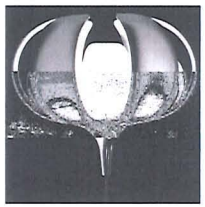
1970s – 16.3%

1940s

1950s – 7.9%

1930s – 22.5%

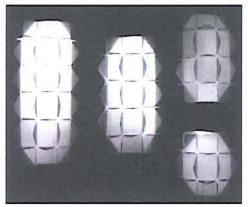
1990s - 55.6%



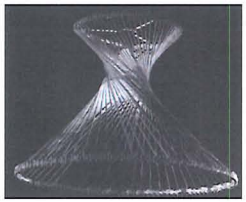
1970s – 38.0%

1990s – 18.5%

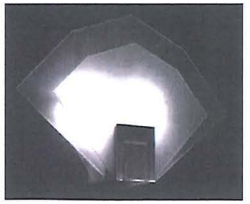
1980s – 18.2%



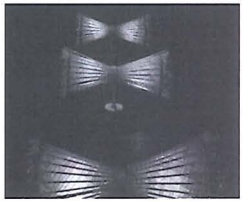
1960s



1940s – 12.3%



1930s – 16.5%



1950s – 44.6%

1980s – 50.2%

1960s – 17.1%

1990s – 13.1%

1930s

1970s – 18.0%

1940s – 31.9%

1950s – 34.5%

**Figure 44: Continuum of Preference, Radios, Soft Lighting and Bed Rooms**

Of the ninety eight images used within the questionnaire, 87.7% (eighty six images) were located within perfect preference continuums which ranked all seven design decades, from most 'liked' to most 'disliked' through first, second, third, neutral, third, second, and first preference positions. At the planning stage it had been thought that asking respondents to rank the seven images in order of preference for each product category would require a high level of consideration, rather than the rapid expression of preference desired. However, by arranging the preference responses in order of the first three selections for individual products, ranked continuums of preference were achieved.

By examining the images as continuums of preference the statistical data began to have meaning within the design context. Across all fourteen product categories the first most popular selections, for both 'liked' and 'disliked', averaged 40% of the responses (figure 37 and 38 in the text and appendix figures 48 and 49 for the tabulated data). With such high levels of preference consistently reflected in the findings, the images at the two extremes of preference, most 'liked' and most 'disliked' were re-examined for commonalties and exceptions within the images selected.

A compilation of the most 'liked' images included products from the 1930s, 1950s, 1970s, 1980s and 1990s. However, stylistically the products all appeared contemporarily relevant (figure 45). It was as though the products selected almost represented the essence of contemporary product forms. All the products had been chosen by the investigation to be familiar to or still available within the contemporary context but those preferred by the respondents appeared to represent the essential, fundamental form of the products at the time when the questionnaire was completed. Exceptions to this observation were, most marked within 'soft chairs' and 'soft lighting' (figure 45), which appeared dated unless reconsidered within the context of the selection offered (figures 41 and 44). However, 'soft lighting' might only appear a contemporary choice if considered in terms of a renewed interest in 1970s lighting, and not if considered against the perhaps more

obvious choice of the shaded table lamps selected within the second and third preferences.

The most 'disliked' selection (figure 46) contained products from the full range of design decades offered and appeared to represent, quite strongly, the greatest deviation from the 'contemporary essence' for each product form. The products looked old fashioned, or out of step with the more contemporary product forms. Both most 'liked' and 'disliked' preferences appeared to reflect a relationship with the most familiar form of the product, proposed as representing the essence of the product form, relative to the contemporary context.


Figure 45, Most 'Liked' Selection


Figure 46, Most 'Disliked' Selection

The concept of a 'contemporary essence' represented the form of the product considered most preferable by the majority of the respondents and reflected product forms most contemporarily familiar at the time of the questionnaire. For example, the jug kettle of the 1980s and 1990s (figure 43). This did not equate to design 'classics' that remain potent through time and rely on the 'authority' of publications to define their status. For example, the recent rise in prices of the 1950s Ericsson telephone with its elevation to the status of design classic (figure 39). Nor would the contemporary essence reflect the zeitgeist, or spirit of the time, in product design. Rather the contemporary essence reflects a broader popularity within the consumer market.

The notion of a preference for the contemporary essence of product forms explained variations within the data, where a substantially greater or smaller than average response was given. The variations corresponded to product forms either very different to the contemporary essence, or where there was more than one example very close to the contemporary essence. For example, the 1990s 'living rooms' was the only image that represented the contemporary essence of the form and, therefore, raised the 'liked' response to 71.0% of preference, greatly in excess of the average 38.5% recorded for individual products but close to the 73.8% for the first three selections (figures 37). The strength of preference for room settings, living rooms and bedrooms due to their combination of products as: *'a multi-dimensional matrix or space. A particular 'style' [or product form] will occupy a cluster of neighbouring points [or products], a cluster which determines the particular fashion theme for that season'* (Lloyd Jones, 1991, p.245). The images reflected collections of products, which when styled together reflected the taste of the time, rather than the design of the individual constituent products.

The utility aspects of 'bathrooms' provided examples of more than one image very similar to each other and close to the contemporary essence in the 1990s and 1980s, splitting the recorded preferences to 24.9% and 20.9% respectively. Individually the percentage preferences recorded were far lower than the average 38.5% (figure 37), but very close if considered in combination (figure 43). In the bathrooms, where the individual products included were less defined by period style or fashion and more closely

defined by their functional purpose, for example a bath, the preference was less defined (figures 37, 38 and 43).

If the concept of a contemporary essence had been known when the images were selected, the variations within the image selection, for example the living rooms (figure 37) could have been reduced and this might have increased the consistency of the preference rating achieved in each product category. Preference might then be predicted following the three most popular selections of individual product categories, consistently achieving averages of 73.8% - 78.8% for both 'liked' and 'disliked' selections (figures 37 and 38). Consistently accounting for 73.8% - 78.8% of 'liked' and 'disliked' preference would contribute to an evidential base for further research and investment into the visual nature of product design.

**REVIEW OF SECTION 2 – VISUAL PREFERENCES**

The image selection and question design achieved a balance between responses and information achieved in excess of that anticipated within the design of the questionnaire (Section 3.2.4). The analysis demonstrated a high degree of design sensitivity from rapid, intuitive responses to visual stimuli. The initial analysis identified a small 'statistically significant' association between age and preference.

Whilst 'statistically significant' the statistical association did not quantify the relationship or identify a specific time in life as indicative of a formative period and so was of minimal use within the design context. However, further analyses illustrated a stronger association between the design decade and preference, rather than with the respondents age. The majority of preference for both 'liked' and 'disliked' selections were associated with the most contemporary decades, 23.9% 'disliked' the 1970s, 19.8% 'liked' the 1980s and 23.0% 'liked' the 1990s. As preference was associated with time rather than age the analysis was extended to identify preference based on individual product categories and found an average of 73.8% for 'liked' and 78.8% for 'disliked' preference located in the first three selections. As the analyses moved closer to the individual product categories and away from the association with age, the specificity of preference increased. In doing so variations within the data were revealed prompting analysis of preference

associated with individual products, where the data was examined in relation to the visual images.

Analysis of the responses to the visual images revealed a preference described as representing the 'contemporary essence' of product forms. This preference incorporated the distribution of preference throughout both the 'liked' and 'disliked' selections and explained variations within the data.

The analysis of the visual element of the questionnaire had, at one and the same time satisfied and challenged the hypothesis of formative periods for product preference by identifying two trends. Firstly, a 'statistically significant' association between age and preference had been found, although it was of limited use within the design context. Secondly, a stronger preference was identified related to the contemporary decades of the 1970s, 1980s and 1990s. Examining the statistical evidence in relation to the visual images refined these findings. Interrogating the visual images revealed the stronger trend was for a preference that reflected characteristics within product forms that were proposed as representing the 'contemporary essence' of product forms. The preference for the 'contemporary essence' consistently specified an average of between 73.8% for 'liked' and 78.8% for 'disliked' preference. Because of the high percentage of preference identified, the consistency of this preference across the product range, and the relationship to the visual form of the products, these findings have real use value for design.

In addition, the findings supported the use of visual images within questionnaire methods. Using visual images revealed preferences, which may have been impossible to express if asked to describe or define in words alone. These preferences reflected individual intuitive responses, free from conscious considerations or influenced by peer group pressure (Bruseburg and McDonaugh, 2010). The fifty-five per cent response rate indicated that the images had meaning for the respondents and were transferable to design. The high response rate and additional seventy-five years plus category support the image selection and design process completed during the planning stage and illustrated the value of visual questionnaire methods to the *'recent development of visual research'* (Kalviainen, 2005, p.5).

The analysis of Sections 1 and 2 considered the personal details of the respondents and revealed high levels of sensitivity to visual preference. Section 3 aimed to contextualise these preferences by comparison with a text-based question asking for consciously considered attitudes to design values at the point of purchase.

### 5.1.4 ANALYSIS OF SECTION 3 – DESIGN VALUES

The questionnaire asked respondents to consider the importance of a range of factors that influenced their decisions to purchase products. The questionnaire offered a scale of responses from 1 – extremely important, 2 – very important, 3 – important, 4 – not very important, to 5 – not at all important. A detailed statistical analysis was completed and the data and graphic illustrations are presented in the appendix. A summary of the findings are presented here and cross-referenced with the appendix to support specific details.

#### Missing Responses

The number of missing responses varied for each factor. The 'missing' responses, from the total number of questionnaires completed were analysed to identify the degree of difficulty in responding (figure 47 and 48).

| | Mod non Dec. | Traditional Dececora-tive | Similar To Home | Reliability | Easy to Use | Enviroment. Friendly | Price | Value for Money | Feel Good |
|---|---|---|---|---|---|---|---|---|---|
| Valid Responses | 2530 | 2572 | 2576 | 2669 | 2637 | 2571 | 2606 | 2648 | 2561 |
| Missing Responses | 178 | 136 | 132 | 39 | 71 | 137 | 102 | 60 | 147 |

Figure 47, Valid and Missing Responses for Each Factor.

The average number of 'missing' responses was 111, across all nine factors. The 'missing' responses were identified against the individual factors as it is *'often what they don't say is the most interesting'* (Grinyer, personal interview, 07.07.1998) (figure 48).

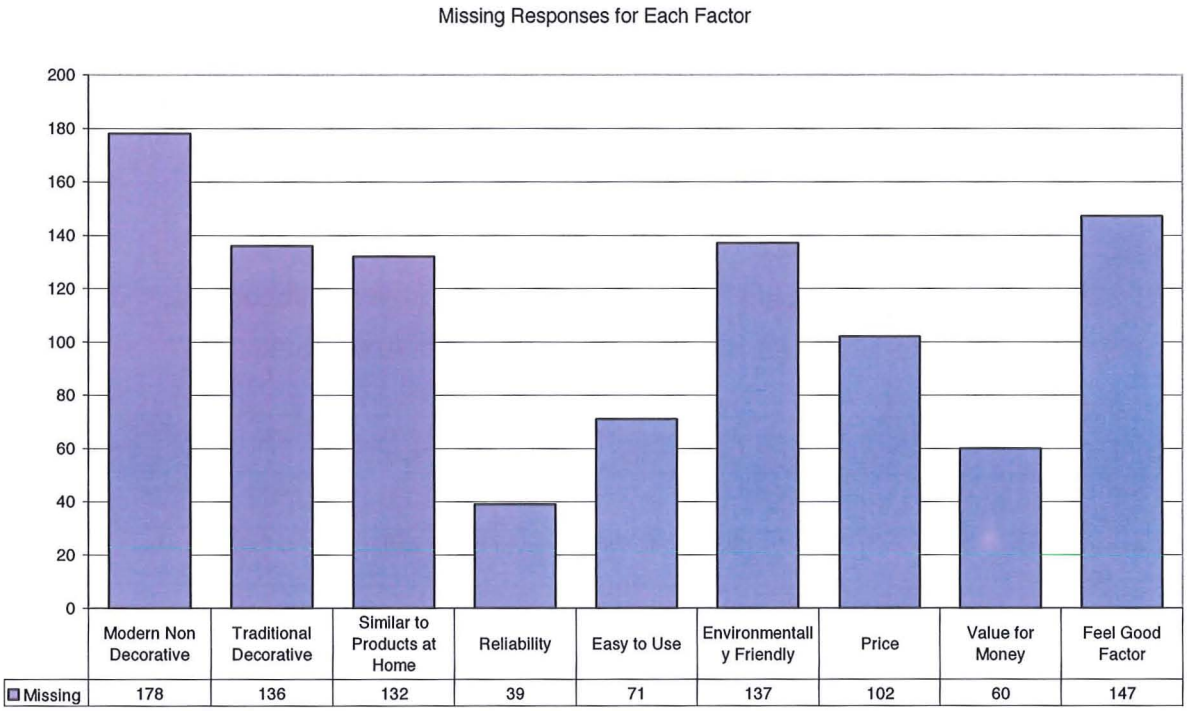



Figure 48, Missing Responses for Each Factor

Figure 48 illustrates the missing responses for each factor and the findings were summarised around clusters of characteristics:

- **Form: 'modern non-decorative look,' 'traditional decorative look' and 'similar to products at home.'** - In contrast to the high degree of design awareness indicated by the analysis of the visual preferences (Section 2) these factors contained the highest rate of 'missing' respondents, an average of 149.
- **'Environmentally friendly' and 'It made me feel good'** had similarly high missing responses, an average of 142.
- **Function and Price: 'Reliability,' 'easy to use,' 'price' and 'value for money'**, the more tangible considerations, had far fewer missing elements, an average of 67.

The factors for 'form' and 'feel-good' perhaps reflected areas where sensitivity was unconscious and assessments harder to rationalise or quantify. At the time of the questionnaire completion 'environmentally friendly' may have been an unfamiliar concept in connection to product purchases, or difficult to evaluate for a given product and therefore, reduced the number of responses. The difference in the 'missing' responses may have reflected the different processes involved within

conscious and unconscious judgements. An unconscious sensitivity to factors may make their conscious assessment difficult. Particularly as the earlier visual questions had prompted rapid responses and this mode of response may have continued for the text-based questions.

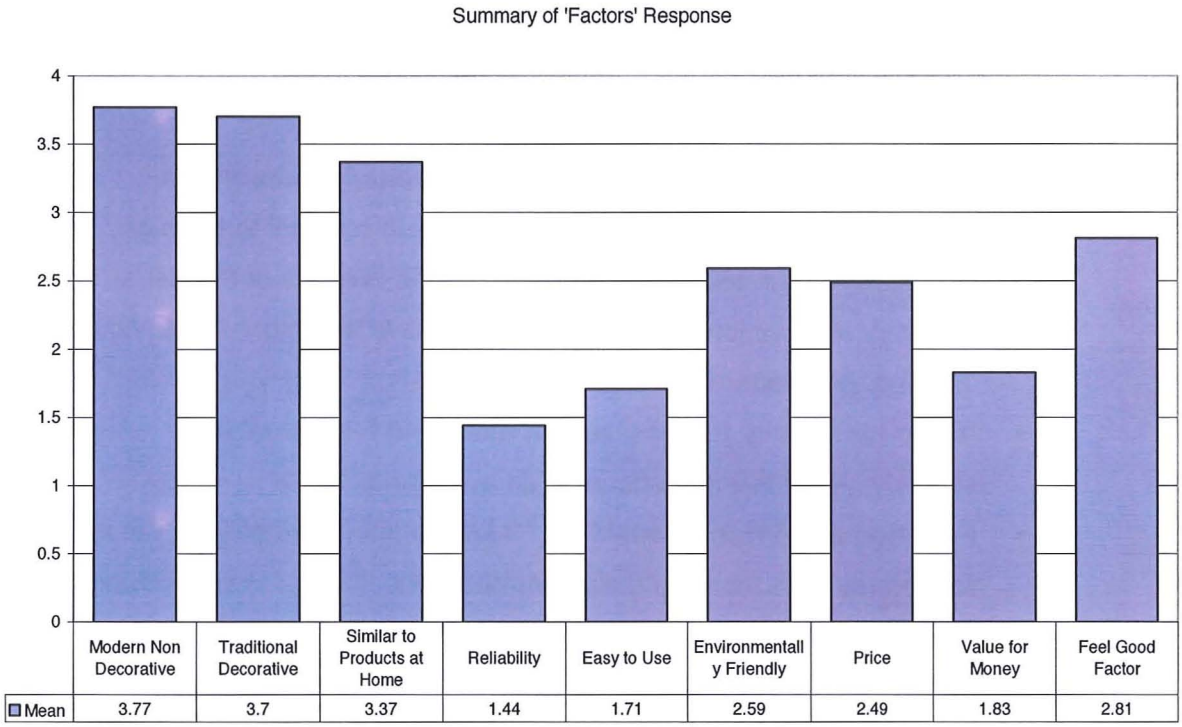
### Completed Responses

The completed responses were analysed and the levels of importance for each factor specified and then tabulated (figure 49 and 50).

| | Mod non Dec. | Trad. Dec. | Sim. To Home | Reliab-ility | Easy to Use | Enviro. Friendly | Price | Value for Money | Feel Good |
|---|---|---|---|---|---|---|---|---|---|
| Number of Responses | 2530 | 2572 | 2576 | 2669 | 2637 | 2571 | 2606 | 2648 | 2561 |
| Average Rate of Importance | 3.77 | 3.70 | 3.37 | 1.44 | 1.71 | 2.59 | 2.49 | 1.83 | 2.81 |

1 = Extremely Important, 2 = Very Important, 3 = Important, 4 = Not Very Important, 5 = Not at all Important

Figure 49, Descriptive Statistics of Factors by Number of Responses and Average Rate of Importance.




1 = Extremely Important, 2 = Very Important, 3 = Important, 4 = Not Very Important, 5 = Not at all Important. The shorter the column the more important the factor.

Figure 50, Summary of 'Factors' Responses

The shorter the column, the more important the factor was considered. It was interesting to note that the pattern of importance associated with the factors followed the pattern for the 'missing' responses. The more important the factor the fewer missing responses had been recorded. Whilst there may have been some impact from the rapid responses to the visual questions in Section 2, these findings supported the conscious value associated with each reflected by the 'missing' responses. Stylistic factors were considered 'not at all important', whilst the 'feel good factor', 'environmentally friendly' and 'price', were 'important'. 'Value for money', 'easy to use' and above all, 'reliability' were considered 'very', if not 'extremely important'.

Two questions remained, was there any influence related to the sex of the respondents and their age within the responses (figure 51 and appendix figures 57 – 74 for detailed statistical analysis and graphics)?

| Factor | **Largest % Group** | **Priority / Average** | *Effect of Age* | **Effect of Sex** |
|---|---|---|---|---|
| **Mod. Non Dec.** | 40.0% Not V. Imp | 9th / 3.77 | None | None |
| **Trad. Dec.** | 39.6% Not V. Imp | 7th / 3.70 | None | None |
| **Sim. To Home** | 31.7% Important | 8th / 3.37 | Yes, Younger Imp | None |
| **Reliability** | 67.1% Ex. Imp. | 1st/ 1.44 | Yes, Younger Imp | None |
| **Ease of Use** | 47.7% Ex. Imp. | 2nd/ 1.71 | None | None |
| **Envir. Friendly** | 36.0% Important | 5th/ 2.59 | None | Yes, Female Imp. |
| **Purch. Price** | 40.0% Important | 4th / 2.49 | None | Yes, Female Imp. |
| **Val. For Money** | 44.6% Ex. Imp. | 3rd/ 1.83 | None | Yes, Female Imp. |
| **Feels Good** | 28.0% Important. | 6th/ 2.81 | Yes, Varied | Yes, Female Imp. |

Ex.Imp. = Extremely Important, V. Imp = Very Important, Imp. = Important, Not V. Imp. = Not Very Important, Not a. a. Imp. = Not at all Important

Figure 51, Summary of Responses against the Effects of Age and Sex on Factors 1 – 9.

Analysis of the factors identified that for, **Form: 'modern non-decorative', 'traditional decorative' and 'similar to products at home'** there was no effect of sex and little effect for age. Although younger respondents considered 'similar to products at home' slightly more important than older respondents. Overall an average response value of 3.6, or not very

important was identified, the majority of respondents rated these characteristics as 7th, 8th and 9th in assessments of importance (figure 51).

In contrast, **'Reliability,' 'ease of use' and 'value for money'** were prioritised with an average of 1.7, or very important, the majority of respondents considered these factors as 'extremely important' and rated these characteristics 1st, 2nd and 3rd most important. The only effect for age was younger respondents considered 'reliability' important, whilst female respondents considered 'value for money' important.

**'Environmentally friendly,' and 'purchase price'** were considered slightly less important, with an average response of 2.5. Respondents rated these characteristics 5th and 4th most important. There were no effects of age, although female respondents considered both of these factors important.

**'It made me feel good,'** was considered moderately important, with an average of 2.8. Respondents rated this characteristic 6th most important. This factor indicated a varied association to age and was considered important by the female respondents.

The findings indicated that any intuitive or formative visual preference would either be moderated by a range of consciously considered factors, or perhaps, post rationalised using these factors as the criteria to explain or support unconscious choices.

Analysis of the final open question, 'Other Factors', received a high response, of the 2,698 responses analysed, 1,286 or 47.7% included an entry.

In general, the 'Other Factors' responses consisted of variations on those factors already identified and validated their inclusion within the questionnaire. For example, 'durability', 'comfort' and 'safety' all featured highly, whilst 'availability', 'recommendations' and 'source of production' were also mentioned. In addition to the 1,286 inclusions, a further 41 respondents included letters and requests for copies of the analysis. Some respondents, although unaware of the specific aims of the research, were sensitive to the age of the products illustrated. For example, a male

respondent, in the 71 – 75 year category from Chester, wrote expressing curiosity at the *'philosophy behind [the] choice of examples, a number of which [he] remembered from the post-festival of Britain era'* (CH, 1999). The respondent identified himself as an architect and compared the products shown to those that he and his wife had purchased when they were first married in 1951.

In contrast, a female respondent, in the 61 – 65 year category from London, wrote explaining how she had *'always been interested in design since [she] was a child, although [she had] no wish to work in this field'* (N, 1999). She went onto express her surprise at the choice of examples in each selection as, *'the portable radios shown seem rather more stereotypical of certain periods, rather than either very practical or exciting'* (N, 1999).

Whilst a gentleman from Farnham telephoned and then wrote to say that he was 75 years old and had not completed the questionnaire as he did not like any of the products shown but went onto suggest;

> *'it would have been more helpful if you had included a 'classic' in each group, i.e. Gordon Russell, Herman Miller, Scandinavian items in furniture and textiles, Italian lighting, etc.'* (GU, 1999).

Clearly these 'older' consumers challenged the negative assumptions of the designers (Section 4.2.2, question 2.4) and the attendees of the Matrix Conference (1999, Section 3.2.6), were interested in design and in participating in associated investigations.

**REVIEW OF SECTION 3 – DESIGN VALUES**

The questions in Section 3 asked the respondents to consider 'factors that have influenced your decisions to purchase products'. The responses indicated that overall the function of the product in use and its assessment as representing value for money, were considered most important. In contrast, the look of the product within the categories defined was considered least important. These assessments of importance were supported by the pattern of missing responses, with less missing elements for those values considered most important at the point of purchase (figure 47 and 48).

Section 3 of the questionnaire contextualised the findings of Section 1 and Section 2 within consideration of a range of additional factors that influence the purchase of products. The analysis suggested a high degree of design interest, motivation and discrimination in design values. If the findings for Section 3 were considered without knowledge of the high levels of design sensitivity identified in Section 2, the responses might appear to confirm the design professionals' assumptions of a decline in interest in design post forty years (Section 4.2.2, Question 2.4). Using traditional text based techniques alone would have confirmed Oppenhiem's warning that attitudes were no guarantee of behaviour (1992, p.176).

The findings indicated that actions might be modified, or explained by a complex mix of consciously and unconsciously considered factors. For example, either there was an apparent contradiction in the value of the visual nature of the product, where rapid choices indicated high levels of discrimination that were discounted within conscious considerations of additional factors. Or, that the visual element was least important within decisions to purchase but important enough for consumers post fifty to have developed significant levels of sensitivity to the visual characteristics of product forms sufficient to prefer those which were relevant within the contemporary context. This complexity and the challenges they pose to assumptions associated with ageing, support the development of visual questionnaire methods to identify the intuitive and unconscious elements within preference.

### 5.2.1 REVIEW OF THE VISUAL QUESTIONNAIRE

With the completion of the analysis of the visual questionnaire, the investigation returned to the initial questions raised in the planning phase to consider the implications for the findings (figure 52 for summary).

1. Were consumers, post fifty, interested in design?
2. Was there a difference in visual preference based on sex?
3. Was there an association between visual preference and age?
4. How important were visual preferences for design purchase decisions?
5. What other issues did U3A consumers consider important?

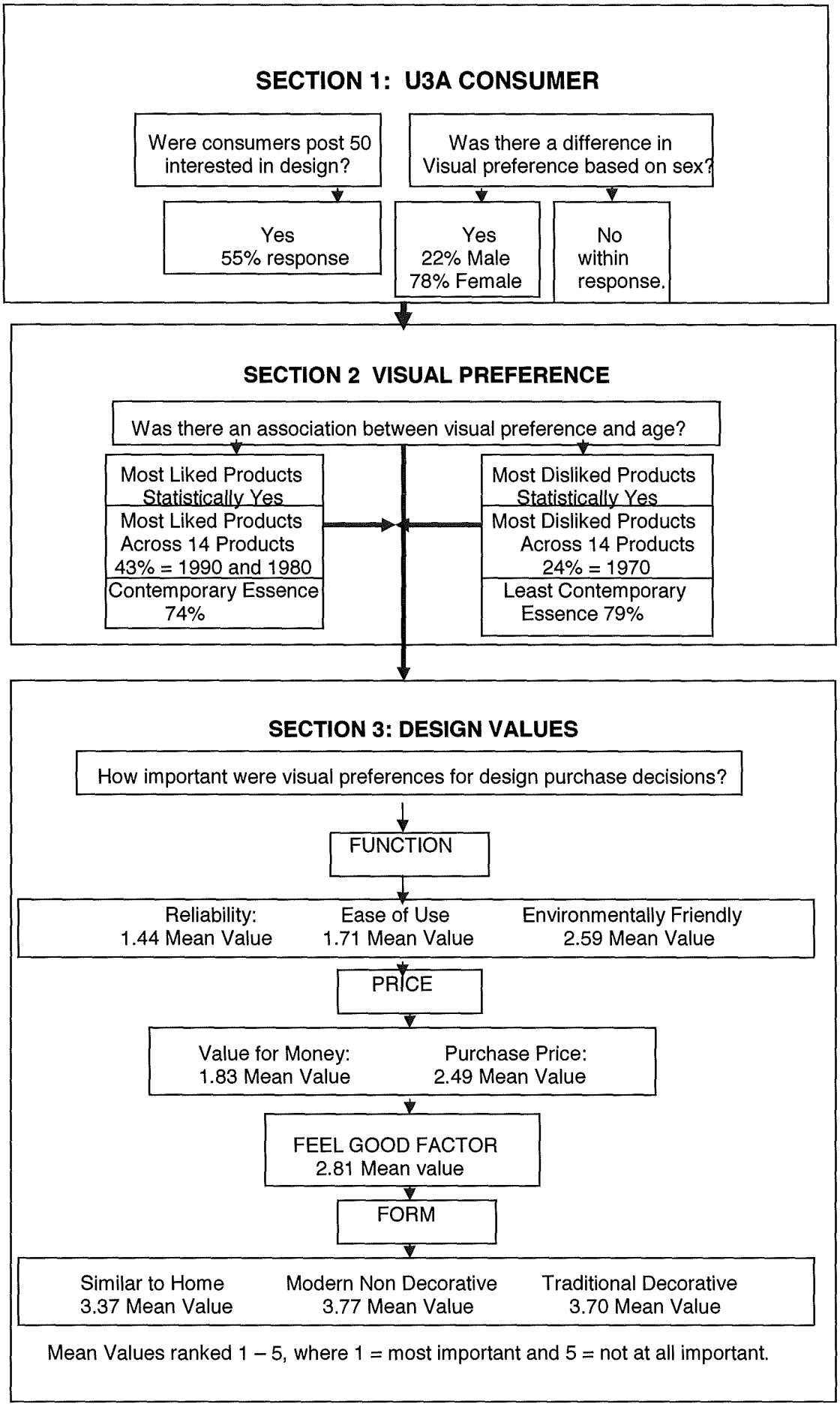



Figure 52, Overview of the Visual Questionnaire Findings.

**1. Were consumers post fifty interested in design?**

The questionnaire response rate indicated an overwhelming answer, yes. The 55% response rate represented an exceptionally high response for a postal questionnaire. The response rate also challenged both the designers assumptions of lack of interest in design post forty (Section 4.2.2, Question 2.4) and the attitudes of the attendees at the Matrix Conference (1999) who assumed 'older' consumers might be either unable or disinterested in completing the questionnaire. The response rate supported the value of a visual questionnaire and the process completed to design the questionnaire.

**2. Was there a difference in visual preference based on sex?**

There was a difference in the respondent sample in that 78% of respondents were female. However, there was no difference in their visual preferences. Beyond visual preference, in the factors which influenced decisions to purchase products those design values considered moderately important, 'environmentally friendly', 'purchase price', 'value for money' and 'it made me feel good', showed a slight increase in assessments of importance by female respondents.

**3. Was there an association between visual preference and age?**

The analysis identified two associations; the first, a statistically significant association between visual preference and age, which indicated a trend for 'older' respondents to prefer 'older' products. Further analysis identified there was a stronger relationship between the design decades and preference, indicating the preference was related to time rather than age. The second, stronger association was identified by comparing the statistical analysis against the product images revealing a preference related to the most familiar form of the products and proposed as representing the contemporary essence of product forms. These findings again supported the value of a visual questionnaire as an effective method to measure visual preference. The extremely high response rate indicated that this questionnaire method overcame Robson's warning that *'in many situations people may, not unreasonably, just not be prepared to co-operate in something that appears boring'* (2nd ed., 2002, p.293). In addition, the responses were analysed so that the findings were visually

displayed and directly transferable for use as visual references within the design process.

The association between visual preference and age was not sufficient to support the hypothesis of a formative period for preference. However, the positive response rate challenged the negative assumptions of diminished interest in design post forty and anecdotal evidence of early formative periods fixing preferences and reducing later interest in design. By completing the questionnaire the respondents indicated that they were interested in design, in that they chose to take part. That they completed the questionnaire and expressed their visual preferences, from the selection provided, and considered issues that informed their decisions to purchase indicated that in addition to being interested, they had also been influenced by design.

**4. How important were visual preferences for design purchase decisions?**

Function and price were identified as the most important factors considered by consumers at the point of purchase. If function and price are satisfied by manufacturers and if the values reflected in the responses to the 'attitude scales' associated against the factors defined by the questionnaire, were the only assessment of consumer behaviour, it might be difficult to justify investment in product forms beyond reflecting these criteria.

Product form was considered the third purchase decision discriminator after function and price. If the attitudes analysed were reliable reflections of behaviour, then an emphasis on product forms as a means to differentiate design might appear poorly placed. However, the apparent contradiction between the unconscious design sensitivity expressed in Section 2, and conscious evaluations of design values considered in Section 3, echoed Oppenheim's warning that attitudes are not guarantees of behaviour (Oppenheim, 1992, p.176). The difference in responses perhaps reflected different assessment processes, conscious and unconscious, referenced within any product selection. As Leake observed, this assessment supported Professor Zaltman of the Harvard Business School challenge, that:

*'the questionnaires upon which market research is based probe only the conscious mind. This, he says, explains their lamentable inaccuracy. ... "when it comes to shopping, what people say and think are very different from what they actually do. There are unconscious processes at work"'* (Leake 1999, p.7).

Professor Ramachandran, in his Reith Lecture (2003), illustrates the power of the unconscious mind to process a myriad of visual decisions and guide actions by explaining the mental processes involved in driving a car whilst engaged in an intimate and animated conversation with a friend. Ramachandran explains how the conscious mind engages in the conversation whilst the unconscious mind gets on with driving the car. With practice the complex combination of co-ordinating activities involving hands, eyes and feet become second nature within an unconscious process. Whilst Ramachandran explains it is impossible to imagine an unconscious conversation however much we practice.

The ability to make rapid intuitive decisions is thought to derive from the adaptive unconscious. *'The adaptive unconscious is not to be confused with the unconscious described by Sigmund Freud which was a dark and murky place filed with desires, memories and fantasies that were too disturbing for us to think about'* (Gladwell, 2005, p.11). Lehrer (2009, p.19) suggests that the adaptive unconscious is thought of as a computer making numerous, multiple decisions in order that we can respond intuitively and without constant recall to conscious consideration. Athough as Lehrer observes this metaphor is misleading in one sense as *'computers don't have feelings'* (2009, p.19) and *'the world is full of things, and it is our feelings that help us choose among them'* (2009, p.24). It is our emotional responses, our feelings for or against a product that allow rapid expressions of preference.

Until recently discussions on how the mind and brain worked were largely speculative. Although now there is *'experimental evidence for something we all instinctively know: that subconscious thinking is the source of our inspiration – it is central to our creativity'* (Douglas, 2007, p.45). Whether these thoughts are subconscious or unconscious, whether we are partly or fully unaware of these processes at work, they are often difficult to verbalise and articulate, as verbalisation requires conscious thought.

Further, in shifting from unconscious to conscious modes of thinking we actually *'hinder performance on insight problems ... those for which the solution seems to pop out of the blue in an aha! moment'* (Douglas, 2007, p.46). Such modes of thinking are similar to the rapid responses to visual preference noted in Section 2. The simplified expression of 'liked' or 'disliked' allowed discriminating choices without the need to consciously explain or define the preference. Although in Section 3, when respondents had to consciously consider these visual preferences, they were thought less important in relation to design values, such as function or price.

**5. What other issues did U3A consumers consider important?**
48% of respondents reinforced their assessments of the design values by including additional comments to support those already assessed. These responses confirmed the value of the factors identified within the questionnaire design.

Section 3 of the questionnaire contextualised the analysis of Sections 1 and 2, within conscious considerations of design values. From analysis of the 'missing' responses and the 'design values' defined, the respondents appeared to confirm the design professionals assumptions of a decline in interest in design post forty (Section 4.2.2, Question 2.4). However, in combination with the high levels of visual discrimination identified by the analysis of visual preferences in Section 2, the overall analysis challenged assumptions of a decline in interest in design. The apparent conflict in the findings was perhaps not within the degree of interest in design but rather the conscious expression of the preference in decisions to purchase. As Richard Satherley observed, people are not: *'really interested in design. They need to have it shown to them'* (personal interview, 11.06.1998). The use of visual images illustrated that when consumers post fifty were 'shown' images of design representative of particular periods of time, they were sufficiently interested to make discriminating choices and that these choices were not dependent on age alone.

The questionnaire identified the value of using visual methods as it can be difficult to consciously consider unconscious intuitive choices. And in doing so consumers might reduce the perception of value of qualitative

unconscious visual choices against those issues more easily quantified consciously, such as function and price. The value of the visual element of the questionnaire rests in its potential to prompt rapid intuitive responses reflecting unconscious preferences more closely related to what people '*actually do' (Professor Zaltman, in* Leake 1999, p.7).

Whilst products have functional utility and market value, which can easily be measured, their visual appearance also has value within the social context as part of a system of visual communication (Douglas, 1996, p.83). These visual choices may largely be driven by unconscious and apparently intuitive decisions (Reith Lecture, 2003). So when asked for their conscious appreciation of visual preference, respondents considered it of limited value relative to other issues.

The expression of preference as an act of social communication is learnt early in life and refined with experience, as preference continues to develop and adapt to changing social contexts throughout life. In the same way verbal language learnt in early life adapts to maintain its utility in a changing social context. Products become markers of social inclusion or exclusion. This emotional and social role for products makes it harder to explain why the designers thought interest in design diminished strongly post forty, unless considered within the parameters of a largely youth orientated design industry. In this context unconscious negative perceptions of ageing may be incorporated into product forms. The visual presentation of these products will be distinguished from the visual norms of the youth market, insensitive to consumers post fifty and fundamentally flawed even if designed to offer physical benefits. As occupational therapist Judith Payling notes, the quasi-medical aesthetic of product forms for the over fifties contributes to products being rejected by users, even when prescribed for disabling conditions (1998). Later research by McDonaugh (2010) also found the emotional power of negative visual appearance and the associated social stigma, outweigh the promise of improved physical function.

Enforced possession of socially inappropriate product forms, as with medical aids, signal separation and exclusion from the social process. Recipients of such products, who refuse to be passively labelled by the

inaccurate assumptions that infuse these products, logically reject such possessions. The unconscious knowledge of the negative social communication reflected in the visual form of the product represents a high emotional cost. The emotional utility of products has value for consumers of all ages and relevance for design in an ageing population. These findings question the role of design beyond following fashion trends to propose products with positive emotional value and meaning in peoples lives. As Verganti suggests the design question should be *"How could people give meaning to things in this evolving life context?"* (2009, p.11). The question for the investigation became how can these findings help designers give positive meaning to products for an ageing population.

### 5.2.2 RELEVANCE TO DESIGN FOR AN AGEING POPULATION

The visual questionnaire identified that there is a market of people, who are aged over fifty, interested in and influenced by design and who have significant financial resources. The preferences of those post fifty are not known to designers, who tend to associate design with fashion and fashion with the young (Levien, personal interview, 11.06.1998). Alternatively, designers take their lead from their clients, or rely on market research to speculate on the future by extrapolating data from the immediate past. Asking consumers what they want from design can also have limited value if, as Richard Satherley observed, *'they need to have it shown to them'* (personal interview, 11.06.1998). The problem is circular, negative assumptions of ageing held by designers inform poor product solutions, that may be rejected by consumers who either refuse to accept, or simply do not recognise this 'reality' as an accurate reflection of their lived experience.

To shift this negative cycle to one which makes a positive contribution to design for an ageing population designers need to challenge their assumptions to consider positive perceptions of consumers post fifty to design products with meaning for a broader range of users. Products designed with a focus on a broader understanding of performance and free from negative assumptions associated with ageing work better for everyone. For example, the widely emulated Redring GEC plastic kettle was developed despite negative market research, which favoured traditional kettle forms. By reinventing user benefits and redefining the

function of the product, these reservations were overcome and the kettle was reconsidered as a free standing appliance (Harris, 2004). Once this product became available to consumers these benefits were 'seen' and appreciated. The questionnaire respondents preferred the two jug kettles of the 1980s and 1990s from the seven electric kettles included in the selection (figure 43).

The problem is simply that if 'age' is considered a legitimate criterion within design decisions, in an environment with negative un-interrogated perceptions of ageing, the criteria simultaneously prompts an 'aged' response. This is a logical consequence of the association between design and fashion, and fashion with youth (Levien, personal interview, 11.06.1998). If 'fashion' is the domain of the 'young' then the logical, if simplified, association appears 'old fashioned' for the 'old'. This process is not restricted to designers, consumers are complicit in desiring innovation and rejecting old fashioned products via their purchase decisions. By acknowledging this perception, a 'contemporary essence' within design forms proposes a positive alternative. The contemporary essence represents product forms that are contemporarily familiar, continually evolve in relation to innovation in product forms and are defined by an equally strong dislike for products consumers consider 'old fashioned'.

The concept of consumer driven desire for continual innovation in design echoes Crozier's support of Berlyne's work to explain the constant changes in fashion, when he speculates what if:

> *'fashion changes in fact reflect an innate preference for novelty that is related through evolutionary processes to exploratory behaviour? This is the gist of Berlyne's theory, with the proviso that too much novelty is aversive, a proviso that is compatible with notions that changes in fashion are gradual and that many styles that eventually become popular are greeted with hostility when they first appear. Eventually with even greater familiarity we like them less, and look to other designs'* (Crozier, 1994, p.69). (Section 2.2.2)

If there is an *'innate preference for novelty'* and consumers look to the market to satisfy these desires, as preference for a particular style becomes saturated consumption will decline. To alleviate the decline in interest, producers continually provide variations within themes, producing

a series of 'style waves'. The first example in any product series produces the strongest response, as noted by Raymond Loewy's MAYA (Most Advanced, Yet Acceptable) design philosophy (Loewy, 1979). Interest in subsequent variations gradually decline, as these products are perceived as familiar:

> *'Moreover, a sense that particular objects are becoming common may well be reinforced by the realisation that the increase in demand for a successful innovation has led to a decrease in price due to economies of scale. ... commonness is felt as an increasing banality. At the same time consumers perceive a diminution of creativeness or innovative drive among producers of the once novel symbols. Designs for 'new' brands appear to us as increasingly 'facile"* (Lloyd Jones, 1991, p.22).

To stimulate renewed consumer interest a new cycle of design innovations are introduced.

As design styles emerge in a cyclical manner, the length of each cycle is dependent on the relative value of the product within the social context (Section 2.4.5) (Douglas, 1996, p.83). Low value products such as high fashion low cost clothing have shorter style cycles, whilst higher value products such as architecture have longer cycles. The questionnaire analysis provided design decade specific data for the preferences expressed and suggested a roughly thirty-year cycle for product preference;

- 23% of all age groups 'most liked' products from the 1990s,
- 20% of all age groups 'most liked' products from the 1980s,
- 24% of all age groups 'most disliked' products from the 1970s.

This analysis supported similar findings for household products commercially utilised by the interior design company *Coloroll* in the 1980s (Lloyd Jones, 1991, p.250). However, whilst the concept of cycles has value in explaining developments within the market as a logical progression, they rely on the logic of hindsight. Understanding the design cycle in itself is no guarantee of commercial success. Lloyd Jones notes that whilst the interior design company *Coloroll* successfully devised a predictive system in the 1980s it could not save them from economic decline in 1990 (Lloyd Jones 1991, p.250). A retrospective correlation should not guide contemporary or future predictions of causation. As Nassim Nicholas Taleb, Dean's Professor in the Sciences of Uncertainty

at the University of Massachusetts at Amherst, notes when considering the value of models designed to predict future events, *'we cannot truly plan, because we do not understand the future'* (2007, p.157).

Design cycles operate within the social system and are subject to its subtle social variations. The emphasis is on variations between the product forms, rather than their relationship to time. This relationship became clear in the analysis where the 'averaged' responses indicated a preference for the design decades 1990s and 1980s and a disliking for the 1970s. When these findings were compared to the visual images the analysis identified that the preference was in fact with the characteristics of the product form, rather than the design decades (figures 45, 46). The preferences actually included products from a wide range of design decades and shared a strong positive or negative relationship with the contemporary essence. As Becker observes in rationalising consumption behaviour:

> *'Style, moreover, is not achieved simply by change: the newness must be of a special sort that requires a subtle prediction of what will be approved novelty, and a trained person can make better predictions than an untrained person. Style is social rivalry, and it is, like all rivalry, both an incentive to individuality and a source of conformity'* (Becker, 1996, p.46).

Whilst there may be *'an innate preference for novelty'* (Crozier, 1994, p.69), perceptions of style are transformed within the social context. An improved 'contemporary essence' need not diminish the desire for innovation, novelty, or the differentiation between 'high design' and the 'mass-market', or the association between fashion and the young. Improving the emotional design of the contemporary essence may increase the perception of value and thus the longevity of the associated design cycles. Longer design cycles may spread design investment over a longer period and increase the economic viability of such an investment. Expanding the range of emotional functionality may attract a wider range of consumers in a similar manner as Ergonimi's model of physical functionality, where a more generous range of design criteria prompt more inclusive responses.

### 5.2.3 PROPOSING A ROLE FOR THE CONTEMPORARY ESSENCE

Identifying the 'contemporary essence' of product forms offers a potentially economically viable and visually functional bridge between an ageing population and a youth orientated design industry. If preference for the contemporary essence within product forms reflects an unconscious awareness of the social context, and the social context evolves as the population ages, the context may demand more equitable design. Design which offers consumers post fifty a high quality of design reflecting the contemporary essence, with a longer life-cycle, rather than design that reflects negative assumptions of ageing in a simplistic relationship with youth orientated fashion.

However, changing attitudes is not a simple process, as Friedman observes: *'it is not experience but our interpretation and understanding of experience that leads to knowledge'* (2000, p.19) and knowledge to action. Attitudes develop over time, building on beliefs, experiences and view of the world and can be extremely resistant to change. *'When a gulf exists between the user and the product or environment, significant psychological barriers can develop which become increasingly difficult to remove'* (McDonaugh, 2010). An evolutionary approach to changing designers interpretation and understanding of the experience of an ageing population may be more productive than a direct challenge to their beliefs. Adopting the concept of an improved contemporary essence need not contradict the designers assumption of declining interest in design post forty (question 2.4, section 4.2.2). Becker's analysis of consumption behaviour identifies an explanation to the contradiction between negative assumptions of decline in interest in design by designers and the positive expression of preference identified by the visual questionnaire. As Becker observes:

> *'a permanent change in the environment, perhaps due to economic development, usually causes a greater change in the behaviour of young than older persons'* (1996, p.37).

Not because the young respond differently but because 'older' consumers, and perhaps designers, have a greater investment in their existing environment.

It is not because of more or less interest in design but rather limited investment in the old design context that allows flexibility. Those who:

> *'are not so encumbered by accumulations of capital attuned to the old environment. Consequently, they need not have different preferences or motivation or be intrinsically more flexible'* (Becker, 1996, p.37),

or restricted to definitions based on age. Consumers post fifty are interested in and influenced by design but may be less flexible to dramatic changes in design because of previous investments in products and the associated social capital.

With ageing, attitudes remain flexible but the accumulation of and investment in personal and social capital restrict an individual's ability to translate attitudes into actions. This need not restrict the desire to be acknowledged socially, or remain sensitive to the subtleties of visual communication. In this context design could maintain the stimulus of innovation, whilst appreciating the value of and investing in, the 'contemporary essence'. This area of design offers a positive prospect for an ageing population, combining the preference of the majority of the population for the longest period of time. This need not contradict the principles and benefits of mass customisation and segmentation. As Grinyer explained, in segmentation *'you might have one core product on the inside that is presented in a number of different ways ... to suit different users'* (personal interview, 07.07.1998). Rather, knowledge of the contemporary essence offers opportunities to satisfy a greater range of visual preferences, built around 'core products' to 'suit different users'.

The process of designing for mass customisation and segmentation offer opportunities for designers to collaborate in multi-disciplinary teams where they can use their design skills and knowledge of visual preferences more strategically. A broader understanding of design as a strategic process within a wider range of applications can help to identify needs, structure concepts of problems, frame the brief, understand the design process and products through an embodied experience and consider these concepts in relation to visual preferences (Stewart, 2011, p.518, 519). In this context, understanding the social values conveyed through visual preference enhances the subtly of segmentation by reflecting a range of financial flexibility and life style choices. For example, a single person starting out

may desire a different range of visual references to someone newly separated after ten years of marriage, or widowed and approaching retirement. Each is 'single' but perhaps with very different financial flexibility, life style choices and social 'needs'. *'Mass customisation puts increasing emphasis on the skills of the designer, connecting him or her firmly to what is taking place in marketing and manufacturing in a much more fluid way'* (Marsh, 1997, p.37). This shift to a more strategic role for design relies on and is vulnerable to the designers ability to recognise any prejudicial beliefs they may hold and develop methods to overcome these limitations within design for an innovative and age neutral context.

Acknowledging the potential of segmentation and mass customisation in today's market allows designers to focus on the particular interests of specific groups, for example, the fashionable young, families or people approaching retirement, as life style, rather than 'life stage' automatically linked to negative assumptions of ageing. Spreading the cost of innovation across the greatest number of potential consumers, whilst converting an assumption of negative design preferences into the motivation for greater attention to design. An ageing population represent a knowing and discriminating consumer market who are *'more discerning than a lot of companies give them credit'* (Amphlett, personal interview, 24.06.1998), appreciative of and able to invest in quality design solutions.

The key is to recognise the connecting thread that runs between designers, consumers, and producers, of shared experience and knowledge of the social context. Allowing assumptions, rather than knowledge, to fill the gap in understanding between the generations leads to the development of insensitive design for the aged, imposed by the young, which increases separation rather than promotes inclusion.

Product preference represents a combination of elements based on perceptions of performance, where the product mediates between the individual, the task the product performs and the social context. Products possess a functional utility associated with the activity the product fulfils and an emotional utility to communicate within the social norms and context, where: *'norms are those common values of a group, which influence an individual's behaviour through being internalised as*

*preferences'* (Becker, 1996, p.225). Whatever the age there is a potential conflict experienced within any preference selection as consumers attempt to satisfy a range of quantitative and qualitative criteria within the social context.

The relationship between the consumer, product forms and social context identifies the power of design to differentiate products by satisfying varying combinations of factors. The consciously considered factors of price and function are simple to quantify. The more unconsciously considered emotional values, associated with the product form, are harder to rationalise and qualify within the design and purchase process. A limited ability to express the emotional value of a product should not diminish awareness of its value, or attempts to satisfy the desire within the consumer, or designer. Rather, with knowledge, designers and consumers may recognise the potential of the emotional values products possess to stimulate desire and satisfy psychological wellbeing within the social context. It is our instinctive, if unconscious, knowledge of the *'secret functionality'* (Grinyer, personal interview, 07.07.1998) of products to resonate emotional values that should underlie a more critical analysis of the design process. A critically reflective design approach may bridge the gap in understanding between generations and support more sensitive responses for an ageing population.

# CHAPTER 6 – A CRITICALLY REFLECTIVE APPROACH

Initially the investigation anticipated proposing a design tool to translate the questionnaire findings into a transparent and accessible form suitable for application within the design environment. This proposal rested on the assumption that a formative period for product preference would be specified as a result of the investigation. The design tool would incorporate the visual images from the visual questionnaire to act as references to facilitate design solutions with emotional resonance relative to the age of the consumer. However, this scenario was not supported by the findings. Whilst the high response rate and specificity of product preferences identified consumers post fifty as interested in and influenced by design, with experience of and investment in personal and social capital accumulated over time (Becker, 1996, p.4), their preferences did not reflect formative periods early in life. The question then became how to acknowledge the preferences of consumers post fifty, whilst exposing and overcoming any bias within the design process as a result of the designers negative assumptions of ageing. In order to initiate a change in behaviour this bias and any implications that followed would have to be made evident to the designer, as the bias was subconscious and thus difficult to identify or acknowledge consciously.

After reconsidering the literature on design in the light of the interviews with designers and the findings from the visual questionnaire, a critically reflective approach for design was proposed. This approach considers the content and process of design thinking and has been refined through a series of presentations, feedback, reflection, redefinition, testing and amendment. This process has included refereed international conference presentations and publications within design and education (Wright, 2002, 2004, 2005 and 2008a). Further research with the Centre for Learning and Teaching in Art and Design (CLTAD) considered the educational value of critically reflective design practice in higher education. This research tested the validity of the concept of reflection with design professionals, considered the reflective practice of undergraduate ceramic design students and the relationship to their final attainment at graduation (Wright, 2008b). The concept of critically reflective thinking has been applied to teaching practice on a range of undergraduate and post-graduate courses

at Central Saint Martins College of Art and Design and The London College of Communication, University of the Arts London. These ideas have also contributed to further conference presentations and publications in associated areas of design, craft and education (2009, 2010a, 2010b). In joint papers considering Inclusive Design (Wright and Paylin, 2004). Critical reflection in studio practice (Hearn and Wright, 2005, 2007, Wright and Hearn 2006, and Wright, Hearn and Quinn 2008a, 2008b), in luxury high craft (Fraser and Wright, 2009, Fraser, Oberlack and Wright, 2010, Wright and Fraser, 2011), and considerations of what constitutes masters level study in Art and Design (Smith and Wright, 2005). This range of feedback has contributed to ongoing re-evaluation, updating and extending the critically reflective approach within a range of discipline areas and levels of practice. I am grateful for the numerous and invaluable opportunities to discuss and develop these ideas.

This chapter considers what is critical reflection and why is it relevant for design for an ageing population? The sections review the design context and reflection (section 6.1.1), the design process (section 6.1.2) and theories from teaching and learning and critical reflection, to propose a multi-disciplinary critically reflective approach for design (section 6.1.3). This proposal developed by considering the theoretical foundations against feedback from a range of practice (section 6.1.4). An overview considers how critical reflection can be used within the design process so that:

> *'Instead of paying a premium for good design, good design should ensure higher sales and more modest pricing: a virtuous circle from which producer and consumer both benefit'* (Coleman, 1999, p.56) (section 6.1.5).

### 6.1.1. THE DESIGN CONTEXT AND REFLECTION

As a result of the literature, the findings from the interviews with designers, the visual questionnaire and feedback from practice, the emphasis of the investigation changed. From considering how to design for age related preferences in an ageing population, to how to address the mismatch in attitudes and expectations between younger designers with negative attitudes to ageing, and an ageing population who are interested in design, increasingly healthy and financially independent. Where preferences are more likely to be related to a wide range of lifestyle choices than

differentiated by chronological age. As the investigation aimed to make the findings relevant and applicable to design this shift in emphasis required reconsidering the implications of the findings within the design process.

This shift in emphasis was not restricted to identifying a role for the findings but also reflected a fundamental shift in understanding related to my role as the researcher and background as a designer with any associated unconscious bias (Norman, 2010). The conscious aim for a design tool reflected design training as a problem solver, where the solution was dependent on a synthesis of what was found by the investigation (Cross, 1982, p.223, Lawson, 1990, p.115), rather than problem definer (Margolin, 1997, p.230), which questioned the nature of the 'problem' itself. This strategy was open to Fry's warning that design solutions *'exist only in a dependent relationship to needs. If the definition of need is not deconstructed, the ... solutions will remain either limited or flawed'* (1992 p.43).

In deconstructing the aim of proposing a design tool it became clear that whilst 'tools' address specific tasks or problems, in the construction of their aims they maintain the concept of a 'problem' that requires a 'solution'. A design tool for an ageing population implies the problem is the ageing population, rather than considering the implications of negative perceptions of the designers. Proposing design tools to overcome the 'problems' of ageing fail to understand that the 'problem' is within the individual designers outdated conceptions of ageing (Woudhuysen, 1993, p.46). A method was required to critically reflect on the misconceptions within design assumptions, in order to re-establish the value of design thinking to provide innovative solutions and change design behaviour. In essence, *'shift from design, where the emphasis is only on the output, to design thinking, where the emphasis is also on the act or the process'* (Brown, 2007). This emphasis moves design *'upstream'* within organisations and has more potential to *'inspire and inform the designer in the early stages of the design process'* (Porter, 2005, p.1). In the Design Councils *Double Diamond* model of design the early *Discovery* phase of the process is *'one of the most critical and the one which makes the best use of the designer's knowledge and skills. ... and is crucial to defining the nature of the problem'* (2007, p.10). In this context a design approach is preferable to a

design tool as it aims to improve the design decision process, rather than provide task specific prescriptive data.

An approach to design thinking, rather than a design tool also overcame reservations that the tool may rapidly become outdated (Wharmby, personal interview, 15.06.1998). And similarly, the dangers of over prescription within design, as Winfried Scheuer observes of many computer aided design tools:

> *'industrial designers familiar with the latest CAD software programmes claim they can judge which programmes were used by looking at the shapes of modern products such as telephones or computers'* (Scheuer, 1999, p.48).

Both the methods used within the design process and the context defined for any proposed solutions impact on the sensitivity of the design outcomes. The design process adopted frames understanding of the changing context and shapes responses, and the world created through design. In the United Kingdom (U.K.) this process has emerged through historical precedence where:

> *'A significant part of the framework, central principles and traditions of art and design education can be traced back to major developments in the 19th century, when the performance and contribution made by the applied arts (design) to the commercial competitiveness of British industry was first recognised by the State'* (QAA, 2002, p.2).

So much so that *'the design profession, and product design in particular, see the social value of their work as inextricably linked to the marketplace'* (Dunne and Raby, 2001, p.271).

Within this tradition the centrality of three-dimensional practice was originally drawn from the apprentice system and principles adopted from the Arts and Crafts tradition and refined via concepts derived from the Bauhaus (Heskett, 1980, p.103, 116). These methods facilitated reflective practice and learning through making. Where the transfer of tacit knowledge was expressed through the materiality of the process, rather than from explicit explanations from practitioners familiar with translating subconscious actions into conscious descriptions.

Designers educated via these methods may not consciously appreciate the connections between the methods they use and the outcomes achieved. In addition, younger designers experience of design education may be significantly different to their older colleagues. Increasingly higher student numbers, from just over 16,000 in 1994 – 95, to 56,785 students on design courses in the UK in 2003 – 04 (Design Council, 2007 citing Higher Educational statistics for 2005), the use of computer technology, and user centred approaches have contributed to pressure on studio space and a move away from craft centred activities (Wright, 2010a, 2010b). Whilst the loss of craft expertise has been acknowledged within hand based skills, the impact on reflective design thinking and the broader social context is less widely discussed (Fraser and Wright 2009, Wright, 2009). If design practice is no longer directly informed by material feedback traditional conceptions of the reflective process may no longer be familiar within design and this shift raises the question, what is the value of reflective thinking within the design process and specifically for design for an ageing population?

Moon describes reflection as *'a mental process with purpose and / or outcome. It is applied where material is ill structured or uncertain in that it has no obvious solution'* (Moon, 1999, p.5). In reflection, it is important to become aware of the role of personal actions and to understand their implications within a given context. Moon's description echoes Rittel and Webber's description of ill-defined problems as 'wicked' problems (1984). Cross observes:

> *'They are not problems for which all the necessary information is, or even can be, available to the problem-solver. ... In order to cope with ill-defined problems designers have to learn to have the self-confidence to define, redefine and change the problem-as-given in the light of the solution that emerges from their minds and hands'* (2007, p.23, 24).

Whilst Moon (1999, p.5) refers to the structure of the information being considered, Rittle and Webber (1984) and Cross (2007, p.23) discuss ill-defined problems, where all the information necessary is not available. This context creates a dependent relationship where the information available and concepts of the problem defined becomes clear (Fry, 1992 p.43). A critically reflective approach for design for an ageing population

requires attention to be given to the quality of the information consulted and the design thinking process by which it is considered. As Cross (2007) observes, the mental process of reflection works in conjunction with hands on experience and evaluation through defining, redefining and changing ideas of the problem and solution. The quality of the 'solution' is dependent on the quality of the information available and the design thinking through which it is considered against concepts of the 'problem'.

In design, much of the literature on reflection originates from Schon's *Reflective Practitioner,* where *'practice'* is viewed as *'a reflective conversation with a situation'* (1983, p.163). Schon observed professional studio practice where the quality of the *'reflective conversation'* was dependent on the experience of the practitioner. With experience the designer acquires the knowledge of when to ask pertinent questions, understand when and where information is incomplete, challenge definitions of the problem and interrogate the value of solutions. However, in the changing demographic context consumers post fifty have different life experiences, needs and desires from younger designers, which questions whether their experience and understanding can be assumed to be appropriate or sufficient.

If design is to remain relevant within an ageing population professional practice has to be a process of continual learning to adapt to a changing context. This is not restricted to design for an ageing population,

> *'as social and cultural boundaries continue to blur so too do the borders of design as a discipline. ... Our world is evolving so quickly that there may never be an ideal methodology or process. What matters therefore, is that a flexible infrastructure is in place with the foresight and intelligence to respond quickly and appropriately to creative change'* (Design Council, 2007, p.8).

In this context of design as a continual process of learning Kolb's Experiential Learning Cycle is relevant. Kolb proposes a four-stage cycle, or continuous spiral, that can be entered at any point but which often begins at;

- Stage 1 by taking an *'action and seeing the effect of the action in this situation'.*

- Stage two, *'reflective observation'* understands the particularity of the event, so that it is possible to anticipate similar actions and effects.
- Stage three, *'abstract conceptualisation'* reconsiders the process to gain general principles of the event.
- Stage four, in *'active experimentation',* the value of these general principles are tested in new situations.

Progression through this process adds to and refines experience and so a new cycle begins (Smith, 1996).

Moon observes: *'an important feature of Kolb's idea is that the process of learning perpetuates itself'* (1999, p.25) but goes on to challenge the assumption that perpetuation is inevitable within a cyclical progression. *'Prior experiences of the learner ... will affect their initial perception of the experience'* (Moon, 1999, p.33) and willingness to learn from any new experience and to challenge personal assumptions against alternative perceptions. Learning and the translation of external information into new personalised knowledge can not be assumed to automatically follow from experience. The persistence of the designers negative assumptions illustrated that change in behaviour cannot be taken for granted even when information is available and known. As Friedman observes: *'It is not experience but our interpretation and understanding of experience that leads to knowledge'* (2000, p.19). In the traditional studio context, hands on experience with materials may prompt the *'reflective conversation with a situation'* (Schon, 1983, p.76). However, addressing 'wicked' ill-defined design problems, where information may be ill structured and no longer primarily defined by material interactions and have socially negative connotations, requires explicit interrogation of all aspects of the design process and the information on which it relies. Faced with such complexity, where time taken is perceived to be related to the efficiency of the process (Eckert and Stacey, 1998, p.2), it is not surprising that the designers interviewed often relied on secondary sources of information to guide their design responses (Section 4.2.3), rather than interrogating the problem and context. As Norman observes of this *'unconscious bias that can cause them [designers] to see what they wish to see rather than what actually has occurred ... a case of not knowing what is not known'* (2010). New scenarios require new knowledge to frame reflection, interpretation and

understanding of a broader range of experience, which can then be positively applied.

Knowledge is fundamental to design but to be useful it must be actively used and reflected on. As the interviews with the designers revealed, just knowing or possessing knowledge in itself is minimally productive in creating change. As Bloom's Taxonomy of *'cognitive domains'* identifies, knowledge is the lowest level below comprehension, application, analysis, synthesis, and evaluation (1956, p.189 cited in Woods, 2004). In design, the emphasis is often placed on using knowledge within the problem solving process (Cross, 2007, p.38). If reflection is useful in managing knowledge applied to design problems, *'where material is ill structured or uncertain in that it has no obvious solution'* (Moon, 1999, p.5), reflection has to be fully integrated into the design thinking process. With knowledge of how, where and when reflection is most productively applied. To be useful a critically reflective design approach requires a clear understanding of the design process and the role of reflection within the process.

### 6.1.2 THE DESIGN PROCESS

Much research in design has focused on analysis of the design process (Archer, 1963; Jones, 1992; Cross, 1984, 2007; Lawson, 1990) and products (Woodham, 1997; Dormer, 1991; Pullin, 2007, 2009) (Section 2.3). The consumer context has been investigated (Miller, 1987) and distinctions made between socially constructed taste (Lloyd Jones, 1991; Kalviainen, 1999) and personal domains of preference (Putnam, 1990) (Section 2.4). Recognition of the importance of the consumer has contributed to the development of user-centred methods in design (Aldersey-Williams, 1999) and acknowledgement of the *'emotional functionality'* (Grinyer, personal interview, 07.07.1998) products possess. More recently, specific consideration of the pleasure consumers derive from products has been considered beyond the primary functionality of products (Green, 2002), and the role visual preference plays within the design of product forms and in consumer selection (Bruseberg and McDonaugh, 2010).

However, analysing the design process is complicated as designers are often celebrated for their distinctive personal styles, contributing to a misplaced emphasis on design 'personalities' (CSM, 2001):

> *'Design based on the idea of individual genius or artistic imagination involves externalisation of internalised images. This involves a priori ideas and images. The designer comes first in this model of the design process. In contrast, solving problems demands robust engagement with the problem itself'* (Friedman, 2002, p.12).

In reviewing managing design the Design Council note the *'literature on the design process is vast, yet mostly inconclusive'* (2007, p.3). Whilst also noting Clarkson and Eckert (2005) have created an extensive review of practice and methodologies, they agree there is no single model that satisfactorily describes the design process. This may in part be due to a limited understanding of the value of theory in design (Friedman, 2002) or reference to formal design processes, which encourages designers to develop individual design rationales. Un-interrogated, these personal rationales incorporate assumptions that allow negative *'ideas and images'* of consumers post fifty to remain potent. Within studio practice designers share assumptions relating to the needs and expectations of their peer group (Chapter 4). This can also happen within larger professional groups as Pullin describes of Inclusive Design (2009), where a cohort effect emerges to frame a group view (Metz and Underwood, 2005, p. 41). The limitations of the group allow the conceptions that support personal design rationales, to go largely unchallenged. If conceptions of design for an ageing population are inaccurate, outdated and prioritise physical decline (Barber, 1996), whilst ignoring those qualities that make products a pleasure to use (Green, 2002), these products effectively *'disable by design'* (Coleman, 2000). This is not a conscious process or from lack of information but rather from prioritisation of physical functionality within user centred methods, combined with a desire for quantifiable results at the expense of more difficult to measure qualitative issues. This desire for more 'scientific' methods is perhaps, predictable as design moves from an industry primarily focused on physical products to work on *'organisational structures and social problems'* (Norman, 2010).

Younger designers have different life experiences and expectations to consumers post fifty and without evidence or methods to the contrary there is a danger that the gap in knowledge is bridged by stereotypical assumptions of the consumer. Where social stereotypes are based on negative assumptions, the design solutions offered are often insensitive, unpopular and rejected by consumers, even if they offer physical benefits (Payling, 1998, McDonaugh, 2010). If designers remain unaware of the need to challenge their assumptions, they will focus on generating solutions, at the expense of thoroughly investigating the context (Lloyd, 1994). There is an implicit danger of *'solution poverty'* (Ward, 1984, p.229) if existing solutions are merely reworked to satisfy conceptions, without questioning their validity. *'Solution poverty'* not only from reworking existing solutions but also by limiting the potential for the end product. For example, Sam Hecht recently observed of the focus on media attention by student designers when *'he pointed out that the kind of work displayed and discussed at Milan [Furniture Fair] constitutes about 1.6% of what we use and consume on a daily basis'* (Campbell, 2010, p.7). A double jeopardy emerges within the design process when this lack of interrogation appears an efficient use of time, rather than a rush to satisfy the designers preconceived ideas, without fully considering the sensitivity of solutions offered.

If designers believe: *'design is essentially fashion and young people tend to be more interested in fashion than older people'* (Levien, personal interview, 11.06.1998), a self-fulfilling cycle emerges. The culture within which design is practised creates the context by which the design process, its problems and solutions, are understood. If the design process is practised with limited reference to the user, using generalised models of the design process that favour a youth orientated approach, the potential for prejudice to influence outcomes will remain unchallenged. This scenario questions the role of design thinking and critical reflection to contribute to a design process where a broader range of evidence is sought and interrogated.

Within the earlier review of 'the design context' (section 2.3) numerous models of the design process were considered. However, in *Design Methods* John Chris Jones (1992) observes:

*'many writers agree, ... [the design process] includes three essential stages of analysis, synthesis and evaluation ... breaking the problem into pieces, ... putting the pieces together in a new way ... and testing to discover the consequences of putting the new arrangement into practice'* (1992, p.63) (figure 53).

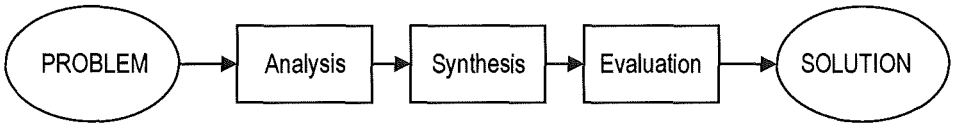



Figure 53: Essential Stages of the Design Process

The elements within this process echo those within Kolb's Experiential Cycle and as Moon challenges the assumption that the process of learning perpetuates itself (1999, p.25) so Cross suggests there is: *'little empirical confirmation'* (Cross, 2007, p.110) for assumptions around design methods. Gedenryd goes further and bluntly states design methods *'don't work'* (1998, p.59). There is danger in describing design thinking as simplistically hierarchical, perhaps as in Bloom's Taxonomy (1956), or progressive, as:

*'the actual sequence of design thinking and decision making is not a simple linear process ... and the problems addressed by designers do not in actual practice yield to any linear analysis and synthesis yet proposed'* (Buchanan, 1992, p.15).

Cross observes:

*'in practice, designing seems to proceed by oscillating between sub-solution and sub-problem areas, as well as by decomposing the problem and combining sub-solutions. ... The creative leap is not so much a leap across the chasm between analysis and synthesis, as the throwing of a bridge across the chasm between problem and solution. The 'bridge' recognisably embodies satisfactory relationships between problem and solution. It is the recognition of a satisfactory concept that provides the 'illumination' of the creative 'flash of light'* (2007, p.78).

Or as Langrish and Abu-Risha describe, when definitions of the problem visually match ideas of the solution within a *'comparative click of recognition'* (2009, p.6).

Cross's 'oscillation' echoes Schon's (1983) description of design as a reflective practice, where the design process appears as a conversation between conceptions of sub-problems and sub-solutions (figure 54).

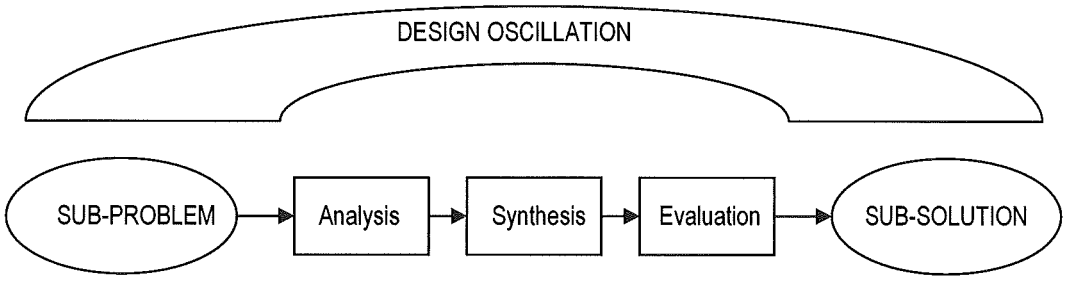



Figure 54: Design Oscillation between Sub-Problem and Sub-Solution

These models have efficiency in their simplicity but also limitations. Firstly, whilst the simplicity of design models may be attractive in their ability to define and describe the issues discussed, they fail to reflect the complexity of the design process, not least in that models offer a snap-shot in time when the design process is essentially dynamic and context dependent. Secondly, there is potential to interpret the design process, from the design models, as a 'closed' system with limited opportunities to consult the user and the complexity of the product in use. And thirdly, as Anttila observes:

> *'In models like these the whole process is seen with the organisers viewpoint: how the process has to be organised, what happens in every phase. The main goal of the research is to get an answer to the questions: What? Who? How?'* (2000, p.190).

They model the easily definable and quantifiable issues. However, such models rarely address the 'Why?' within design, why these criteria and why this concept of the user? If designers link conceptions of the 'solution' to initial conceptions of the 'problem', rather than interrogating the proposed 'problem' they fail to ask, why is this a design problem, whilst at the same time prioritising personal perceptions of the 'problem' within their own range of bias. Ignoring the fundamental 'why' within conceptions of the 'problem' sets the framework for the design thinking process within personal perceptions and limits design solutions to the accuracy of the initial conceptions. Tim Brown, President and CEO of innovation and design firm IDEO, questions framing the designer as an unquestioning *'tool of the*

*development process'* (Brown, 2007), rather than *'being more influential in organisations ... making the link between design and innovation'* (Brown, 2007). For designers to engage with the early influential *'discovery stage'* (Design Council, 2007, p.10) of design for consumers post fifty, it is vital to critically reflective on the value of the assumptions which inform the initial conceptions and on which design problems are defined and assessed.

The aim of reflection, in this context, is twofold, firstly to enhance the creativity of the design process by addressing the 'why' question and secondly, to prompt design solutions based on evidence rather than assumptions. Understanding the process of design and the relationship to creativity is problematic, as whilst practitioners are experientially familiar with reflection and creativity in practice it is difficult to consciously define and verbalise. Particularly, if confined by removal of the traditional design relationship to materiality within the process. However, recent research into the functions of the mind has revealed; *'experimental evidence for something we all instinctively know: that subconscious thinking is the source of our inspiration – it is central to creativity'* (Douglas, 2007). However, subconscious thoughts are difficult to verbalise and articulate and when we try we might actually; *'hinder performance on insight problems. ... those for which the solution seems to pop out of the blue in an aha! moment'* (Douglas, 2007), *'the creative flash of light'* (Cross, 2007, p.78), or *'click of recognition'* (Langrish and Abu-Risha, 2009, p.6). Reflection in design thinking should facilitate and enhance rather than compromise the creative act at the centre of the design process. Identifying when and how to reflect requires consideration of the particular nature of design thinking, the design process and the contemporary context within which it is practised.

By re-conceptualising the design sequence defined by Cross (2007, p.78) into a cyclical experiential progression following Kolb's cycle, rather than as a simplified linear model, design thinking can be modelled as a cyclical iterative process more attuned to continued reappraisal and redefinition of the problem and solution. Kolb's Experiential Cycle embraces the progressive process of design from perceptions of the problem, through analysis, synthesis and evaluation, prior to proposing solutions. Kolb's four

stages of learning can be reconsidered as the linking process in the cycle of design (figure 55).

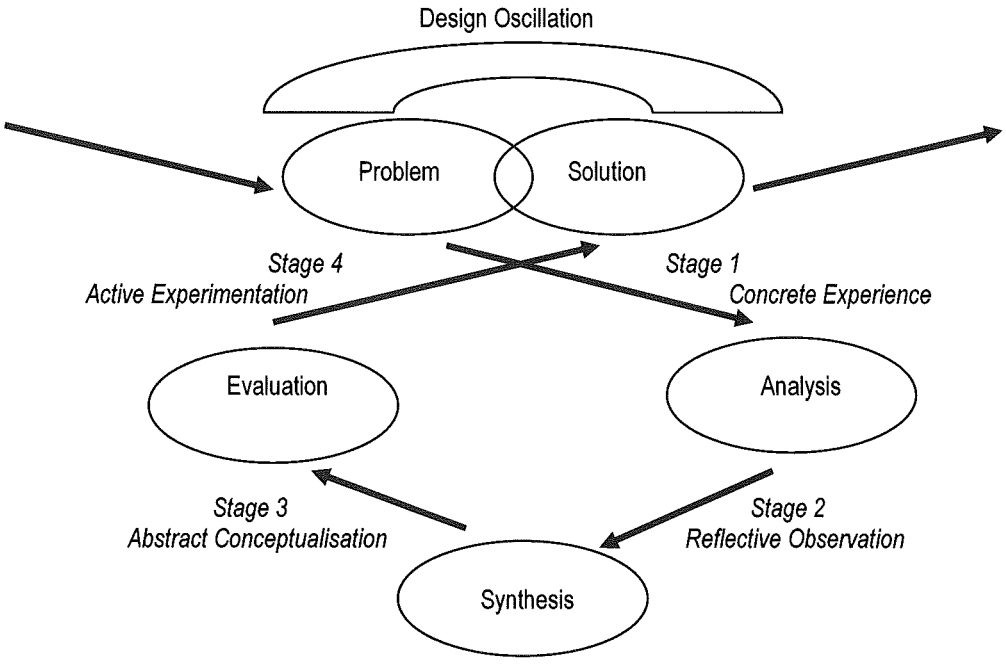



Figure 55: Experiential Design Cycle.

In the Experiential Design Cycle the progression starts by recognising the design 'problem' (top left in figure 55) prior to:

- Stage one in Kolb's cycle, the designer's *'Concrete Experience'* shapes perceptions of the problem whilst taking *'action and seeing the effect of the action in this situation'* (Smith, 1996) in preparation to the design 'analysis' phase of breaking the problem into pieces.
- Stage two, the *'Reflective Observation'* understands the particularity of the event and links the progression to the 'synthesis' in design putting the pieces together in a way that matches the designer's definition of the problem.
- Stage three, *'Abstract Conceptualisation'* draws out the general principles and links them to the design 'evaluation' phase.
- Stage four, *'Active Experimentation'*, the proposed design 'solution' is reconsidered against the problem prior to speculation on their effectiveness in new scenarios.

In this iterative process Cross' design oscillation occurs as conceptions of the 'problem' and 'solution' evolve together through iterations of analysis, synthesis and evaluation. However, this model leaves a number of questions unanswered. For example, Friedman proposes that *'it is not experience, but our interpretation and understanding of experience that leads to knowledge'* (2000, p.19). If knowledge is the aim of the process then there must be a change in the process of 'interpretation and understanding', 'experience' alone is not enough to affect a change in understanding and thus knowledge. Similarly, if Buchanan is correct and design thinking and practice does not *'yield to any linear analysis and synthesis yet proposed'* (1992, p.15), why is the terminology and ordering of design methods, 'analysis', 'synthesis' and 'evaluation' still potent? Gedenryd proposes that the desire for design methods reflects a search for rationality within design (1998, p.35). When rationality defines traditional concepts of 'quality' thinking, within the professionalisation of design practice. Certainly significant support is associated with economic models that propose rational consumers (Begg, 1994, p.77) and predict future scenarios (Taleb, 2007, p.157) that attempt to reduce perceptions of risk to industry (Verganti, 2010, p.3).

However, these models are limited by the criteria they address and made vulnerable by those ignored, such as emotionally driven desires and preferences. Design methods defined by concepts of rationality, rather than experience, fail because they do not reflect the practice of design. Dewey supports the value of experience and observed how when a child or adult is faced with a problem, *'to urge him to think when he has no prior experience involving some of the same conditions is wholly futile'* (1859 - 1952, p.12). Polanyi suggests it is by using our bodies that we make sense of the world, through experience with it and that *'true knowledge is in our ability to use it'* (1966, p.17). Contemporary problem based leaning supports this proposal finding the effectiveness of learning through lectures is minimal compared to practice by doing, or immediately using what has been learnt, a difference of 5% - 90% effectiveness respectively (Wood, 2004).

Gedenryd proposes the problem with rationality lies in cognitive models that locate 'quality' thinking as an 'intramental process' defined solely within the

mind (1998, p.8). Where experience of design suggests designers work out problems through action, in an 'interactive process', using the body in interaction with the world (Gedenryd, 1998, p.9). In this context Gedenryd agrees with Buchanan and challenges the possibility of defining separate phases of analysis, synthesis and evaluation, or ordering the stages in a logical sequence (1998, p.21). Instead he describes how problems and solutions evolve together and illustrates the process in design sketching. Gedenryd considers 'exploration', 'experimentation' and 'understanding' as more useful expressions to describe the process (1998, p.102). Rust illustrates this relationship using a Venn diagram, where 'exploration', 'experimentation' and 'understanding' overlap and interact fluidly at the same time, rather than being separate or sequential (2006).

In this model of interactive cognition, the body and mind 'explore', 'experiment' and 'understand' problems and solutions as they develop together. This alternative terminology is more than semantics and offers two significant advantages. Firstly, 'analysis', 'synthesis' and 'evaluation' rely on what is already known, or is defined as relevant. 'Exploration' and 'experimentation' allow additional elements not known at the outset to be identified and tested within the process, expanding the range of criteria that can be considered. Rust (2003) considers this design ability, to imagine new scenarios, as particularly valuable when working in collaboration with scientists. Scientists *'adopt a generally problem-focused strategy'* (Lawson, 1990, p.32), as opposed to the solution-focused strategy of designers. Secondly, as Friedman noted, it is not experience but 'understanding' that leads to knowledge (2000, p.19). 'Understanding' requires considering new information against existing knowledge, incrementally changing attitudes and behaviour. New understanding, whether consciously or unconsciously acquired through experience expands the designers tacit and explicit knowledge in a cyclical process, rather than simply reworking existing ideas.

But what of reflection within the experiential design cycle? Is reflection limited to the *'Reflective Observation'* in Kolb's model, the linking phase between analysis and synthesis within the design progression? Does this cycle allow an effective design oscillation? Is the process most effective as a conscious or unconscious act? Where is the critical interrogation of the

information consulted to define the brief and assess the proposed solutions?

### 6.1.3 CRITICALLY REFLECTIVE DESIGN

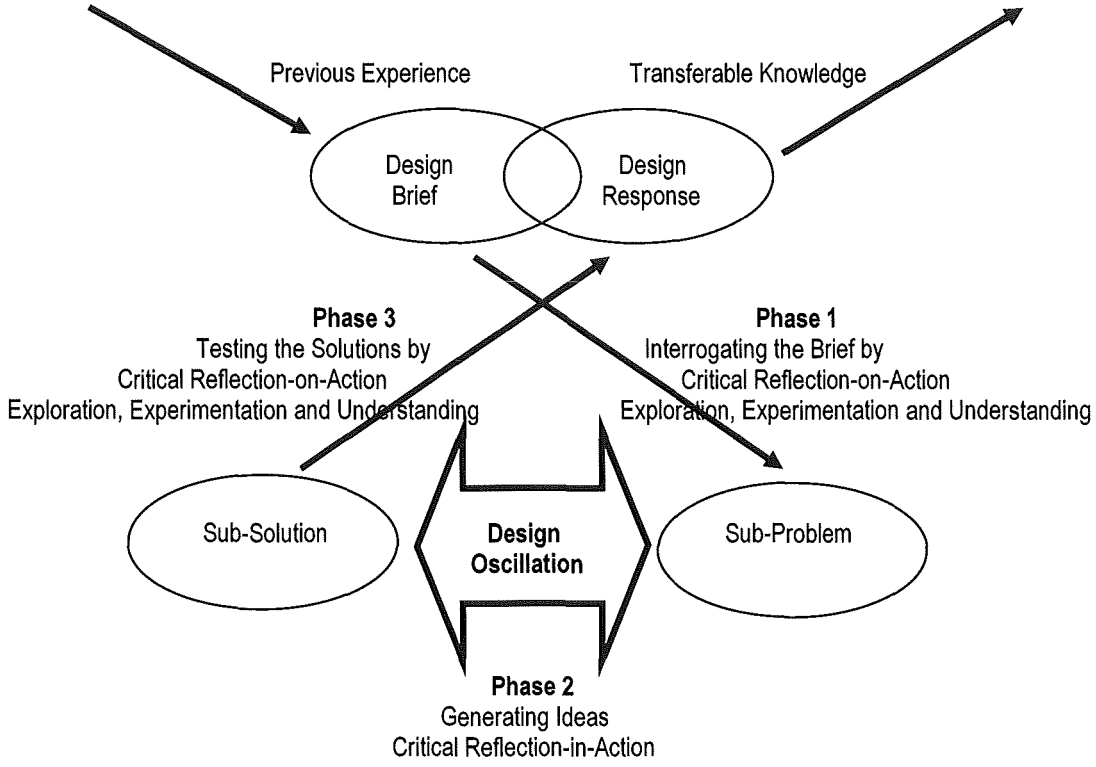



Figure 56: Critically Reflective Design Cycle.

Experience of reflection within design practice is distinctly different from reflecting on events after the fact. In practice, reflection is often subconscious and integral to the design process as part of the material or information interaction. 'Reflection', as design, is context dependent as Schon describes, *'reflection-in-action'* and *'reflection-on-action'* (1983). The differences are key to understanding where and how reflection can be understood within design practice, and where and how it can be developed as a more critically reflective approach for design (figure 56).

The Critically Reflective Design Cycle is a combined model drawn from theories from design and learning. The central cycle draws on Kolb's

model of experiential learning, renamed and reconsidered to reflect the different phases of the design process. The cycle starts from the top left-hand side of the model with previous experience prior to presentation of the Design Brief.

**Phase 1. Interrogating the brief.**

The designer and client come to the brief with a range of prior experiences informing their expectations. *'Often, the problem as set by the client's brief will be vague, and it is only by the designer suggesting possible solutions that the clients' requirements become clear'* (Cross, 2007, p.34). Chris Eckersley reflected, *'I see my job, really, as to try and help them define the brief'* (1998). *'Most designers will see opportunities not seen before and that's one of the reasons you use designers'* (Grinyer, personal interview, 07.07.1998). Whilst Tim Brown observes increasingly clients appreciate that designers *'work in all these different areas, you're seeing lots of things that are going on, can you help us figure out what we should be working on?'* (2007). In this context there is a translation as the designer frames the problem within the terms of their experience. *'The designers' very first conceptualisations and representations of problems and solutions are therefore critical to the procedures that will follow'* (Cross, 2007, p.34). Ordinarily past experience remains opaque within shared expectations and assumptions of the design process but if these are limited or prejudiced, and remain unchallenged, they may hinder positive responses (Moon, 1999, p.33).

Conscious reflection on previous projects and the influence of personal interpretations of the brief, increases opportunities to challenge assumptions, expose bias and research concepts. Investing in research reduces the opportunity of *'solution poverty'* where ideas are merely reworked (Ward, 1984, p.229). Schon describes how this *'reflection-on-action'* draws on previous experience, recognises the ill-defined nature of the problem, and that it has been framed within personal conceptions (Smith, 2001). The model retains the concept of Kolb's experiential cycle and in this phase incorporates the first two stages where actions are taken and the effects noted in the situation in order to understand the particularity of the event. Exploration, experimentation and

understanding guide critical reflection-on-action and challenge the selection and ordering imposed on the criteria incorporated into the process.

Phase one of the cycle neutralises ageist assumptions within definitions of the design brief by recognising the power of the client perspective and design expectations within negotiations. Systematic interrogation of the brief, through exploration, experimentation and understanding of the problem fully explores the nature and the definition of the design problem and context. This phase can intentionally avoid age related discussions, particularly as 'age' is *'increasingly irrelevant as a targeting tool'* (Metz and Underwood, 2005, p.61) If, in response to the introduction of the anticipated age of the user, there is a sudden change in conceptions of the problem the assumptions that inform the shift in perspective can be interrogated and challenged. It is essential that in addition to the *'What? Who? and How?'* that Anttila (2000, p.190) observed within design models, that the reflective question, 'Why' is considered? Why does the client and designer assume criteria associated with the age of the user and are they accurate or valid and where do these issues feature in the hierarchy of needs within the brief?

The necessity of parity between conceptions has been noted within design education (Davies, 2000) and management (Olson, 2000) and can be a lengthy but essential process (Amphlett, personal interview, 24.06.1998). Similarly, verbal negotiation clarifies conceptions as the design brief is transferred from client to designer. Negotiation is necessary as clients describe their perception of the design brief and process and the designer discusses each item to clarify expectations as: *'it is rare that one gets a complete brief that doesn't need reworking or reinterpreting in some way'* (Rhodes, personal interview, 02.06.1998, Section 4.2.4). The importance of verbal skills should not be underestimated. Whilst later visual renderings might be considered self explanatory by the design team and *'the quickest and most efficient way to communicate ideas'* (Porter, 2005, p.5), a rich verbal explanation: *'allow ... clients to interpret shades of meaning not allowed by the drawing'* (Lawson, 1997, p.175, description of Eva Jirincna's client negotiation). The ambiguity of language positively enhances the

creative process (Lawson, 1997, p.175) as words negotiate the visual verbal translations between designer and client. Problems originate within the design brief but solutions emerge from discussion and from this point of view; *'Talking design'* is design (Tomes, 1998, p.142). By consciously 're-contextualising' the design brief, from the client context into the design domain, the process identifies unacknowledged assumptions within both the designer and the client. The focus at this stage is to raise awareness based on specified and verified criteria, rather than relying on an assumption of shared knowledge.

By consciously extending the 'search' or discovery phase of the design process (Design Council, 2007, p.10), the designer enhances the range of references consulted to inform their understanding and definition of the design problem, rather than relying on assumptions to anticipate potential solutions (Margolin, 1997, p.230). An enriched generative phase reduces the tendency toward solution poverty (Ward, 1984, p.229) from utilising pre-existing concepts (Cross, 1990, p.129).

**Phase 2. Generating Ideas - the design oscillation.**

The place where the *'creative leap'* moves the design; *'to a new part of the solution space'* (Cross, 1997, p. 427) in an oscillation bridging concepts of the sub-problem and sub-solution. *'The 'bridge' recognisably embodies satisfactory relationships between problem and solution. It is the recognition of a satisfactory concept that provides the 'illumination' of the creative 'flash of insight"* (Cross, 2007, p.78). Concepts of the problem and solution co-evolve to form a matching problem-solution pair (Cross, 2007, p. 102). In an interview for the New Scientist, neurobiologist Professor Michael Shadlen suggests, insight appears after: *"an unconscious decision to be conscious"* (Douglas, 2007, p.44). Unconscious thinking appears most effective: *'where people have to make difficult choices based on large amounts of hard-to-assess information'* (Douglas, 2007, p.45). This stage incorporates Schon's *'reflection-in-action'*, related to *'thinking on our feet'* (Smith, 2001). Where we draw on tacit knowledge and become aware that *'we know more than we can tell'* (Polanyi, 1966, p.4). Asking for conscious reflection, during this unconscious phase hinders the creative process,

reduces the quality of experiential learning and the sensitivity of the design solutions as it interrupts the unconscious creative phase.

This second phase, the intuitively creative centre of the design process draws on an intentionally enhanced range of references, identified within the first phase, and anticipates later modification through the third phase as the implications of 'solutions' are considered from a range of user perspectives.

Within the design process, initial conceptions of 'design problems' may be dominated by emotional responses and intuitive judgements associated with peer review, personal experience and social stereotypes. Whilst later thoughts reflect conscious considerations required to rationalise judgements and design forms to work within an existing environment. If the designer's environment and personal experiences differ from those of the consumer, their perception of the consumer's existing investment in their environment and willingness to re-invest, will also differ. These differences should be recognised if the designer is to overcome their bias and design sensitive solutions for consumers post fifty.

New design solutions mediate within existing products and the social context. Phase two is the point where most active designing occurs as:

> *'Creative designing seems to proceed by oscillation between sub-solution and sub-problem areas,... The crucial factor, however is the bridging of these two partial models by the articulation of an apposite concept which enables the models to be mapped onto each other'* (Cross, 1997, p.439).

The oscillation allows rapid assessment of alternative solutions by comparison against conceptions of the design problem. The *'apposite concept'* is the one that offers the most favourable connection between conceptions of the problem and proposed solution, within the context. As the proposed solution emerges from the creative oscillation, synthesis becomes the dominant mode as the constituent elements of the design are bought together. Optimising the oscillation phase relies on embracing ambiguity at the heart of the design process. Recognising the indeterminate nature of design problems (Buchanan, 1992, p.18)

allows connections between consciously rational and unconsciously more intuitive thinking, to identify *'apposite concepts'*. If the ageist assumptions of clients and designers have been successfully challenged in phase one, phase two the central design phase looks for the *'apposite concept'*, the bridge between conceptions.

**Phase 3. Testing the solution.**

Phase three returns to more conscious *'reflection-on-action'* and re-translates the proposed solution into the clients perspective, checking initial criteria have been addressed and defined within terms of the solution. Re-evaluation by critical reflection using exploration, experimentation and understanding, consciously translates the experience for the designer and client. Whilst the creative central process is largely unconscious and reliant on tacit knowledge, clients may be reassured by apparently logical explanations for the solution as a reflection of 'quality' thinking and risk reduction. Care should be taken not to mistake an explanation of tacit knowledge within design as a method of translation of tacit to explicit knowledge. Rather, new explicit knowledge is defined based on revised understanding. Similarly, care is required as post-rationalisation can be misleading as it suggests that because something appears 'logical' after the fact, that the design process might follow a similarly 'logical' path. The difference should be understood and explained to avoid younger designers thinking this is so and, therefore, attempting to model their practice on this false assumption.

This second translation, from inspiration to elaboration requires evidence to support the proposed solutions as the designer consciously clarifies issues for the client. This process also translates project specific information into transferable knowledge for the designer and contributes to an ongoing investment in intellectual capital. In Kolb's terms this phase incorporates the third and fourth stages, where general principles are drawn from the proposed solutions and are used to speculate on their effectiveness in new situations. This is where design practice is reconsidered within a wider context and as part of a portfolio of transferable skills where design is conceived as integral to innovation, rather than as an aid to surface styling in the later stages of the design

process. Raising awareness of the value of transferable knowledge, to enhance the quality of intuitive responses when decisions have to be made quickly, encourages designers to invest in their intellectual and creative capital. Whilst designers may intuitively understand the need to invigorate their practice by continually updating their knowledge base, an explicit understanding and explanation may be required for the client when the need for *'intellectual renewal is underestimated'* (Eckert and Stacey, 1998, p.11).

Phase three focuses on the consumer context and consciously balances consumer needs against client expectations. Design solutions should be assessed by an equally rigorous process as used to define the problem, and not assumed to be sensitive to consumer and client needs. As Fry observes, 'need' is an increasingly contested category (1992, p.135), the needs of an ageing population differ from one focused on youth. In order to avoid the designer's bias within the process, evidence to support the design should be rigorous and verifiable (Norman, 2010).

Having defined the design within the context and proposed solutions, the designer consciously delays finalising solutions to allow time to assess solutions from a range of perspectives, user, designer and client. Retaining flexibility in conceptions of the solution reduces the potential for *'solution poverty'* (Ward, 1984, p.229) from solutions assessed rapidly and on the basis of insufficient knowledge, experience or bias.

This phase provides an opportunity to compare the proposed design solutions, from a design perspective, to those already available within the consumer context prior to presentation. Shifting the focus allows reconsideration of the criteria used to define the design problem and proposed solution, either prompting amendments, or a stronger defence of the proposal.

The solution, as the product of the process is presented and evaluated by a combination of visual, text and verbal descriptions, now represents a resolution of issues rather than a compromise of the elements (Cross, 1990, p.128). As all influential perspectives are considered during the design process, any solution will have satisfied the specified criteria or,

provided time for alternatives to be considered and the implications assessed. The findings from this evaluative phase are incorporated into the presentation process to support the proposal. By clarifying the assessment criteria of design solutions and anticipating less favourable responses, the designer may become more strategic in their ability to defend their proposals.

Criteria against which to judge each stage should be negotiated, as part of the process of understanding the implications of design as: *'most designers will see opportunities not seen before'* (Grinyer, personal interview, 07.07.1998). If the designer's experience of the consumer is limited, the staggered interrogation of the brief, during phase one, allows time to understand consumer preferences and the potential of different perspectives to offer alternative insights. The critically reflective approach expands the range of references consulted whilst balancing the creative elements of design by understanding the implications of defining design problems and evaluating solutions for an ageing population.

Essentially, the model proposes three phases of reflection using exploration, experimentation and understanding. Two phases of conscious *'reflection-on-action'* informing and testing the unconscious *'reflection-in-action'* of the creative design oscillation.

The critically reflective approach initially requires a more consciously considered reflective response, until the new criteria have been absorbed into the unconscious to prompt newly sensitive intuitive actions based on tacit knowledge. Consciously checking design criteria against a range of consumer information equips the designer with the skills to reframe problems, explain the process and validate both rational and intuitive decisions within the design process. Schon proposes the ability to reframe problems as the defining difference between the expert and novice designer (1983, p.80). Consciously interrogating assumptions and searching for evidence enhances the intellectual capital available to the designer in three significant ways.

- Firstly by providing evidence to inform the design process.

- Secondly by consciously practising *'reflection-on-action'* the designer enhances the ability to *'reflect-in-action'.* And
- thirdly, consciously practising verbalising design thinking within a structured process enhances the designers capacity to defend design decisions and contribute to multidisciplinary teams to address increasingly complex problems (Brown, 2007).

### 6.1.4 FROM THEORY TO PRACTICE

This section reviews the development of thinking, revising, publishing and feedback, informing an iterative process that integrated theory and practice through teaching and applied research, to develop the Critically Reflective Cycle proposed (see appendix 5 for supporting papers).

In the early phases of the investigation, in response to the literature on the social context of ageing, some of the key assumptions relating to ageing were reviewed in a paper titled, *Consuming Images* (Wright 1997), presented to the Design History Society Annual Conference, in Brighton. This paper discussed the power of images to inform and reinforce stereotypes. The stereotypes chosen were used in advertising and marketing to emphasise ideals of youthfulness, contrasting with negative images of ageing, which simultaneously contributed to outdated assumptions about ageing. In the social context such images are particularly damaging, as they draw on prior knowledge and shared understanding of the 'language' of advertising so the apparent simplicity of images and the relationships they portray become potent (Section 2.4.4). In design, such images reinforce simplistic responses to the ageing population, where design is framed as a problem solving and solution focused process. In this concept of design in an ageing population the 'aged' represent the 'problem' to be addressed. Within this context the proposal of a design tool to translate the findings into the professional design context, appeared a logical response. If a formative period for visual preference were identified and a simple relationship between design and age established, the design tool would present appropriate design styles for each consumer age.

The power of visual preference within design was central to the investigation and established within the literature, the interviews with designers and informed the design of the questionnaire. However, in presentations at the European Academy of Design Conference (Wright 1999a), Research Symposium at The London Institute (Wright 1999b) and the Matrix Conference (Wright 1999c), a range of audiences all expressed scepticism at the value of using images to identify the visual preferences of post fifty consumers. Whilst the concept of a formative period for preference was accepted and the images considered, interesting, representative of the periods defined and having potential to test the idea presented, the general response was sceptical that post fifty consumers would either be interested in, or capable of, making selections.

In retrospect, these early negative responses were all the more surprising when they were so clearly contradicted by the subsequent success of the questionnaire and analysis of the visual relationships. However, the strength of negative attitudes expressed and analysis of the questionnaire clarified that information alone was insufficient to change behaviour. A design tool that merely provided information was unlikely to address issues so deeply embedded within the social psyche. Providing information alone for the design profession was unlikely to change behaviour, when attitudes and habits were so firmly established. The focus of the investigation turned from a design tool to address problems, to a design process to challenge assumptions. From considering the needs of the profession, with established practices and minimal time for retraining, to those still open to influence and learning to be designers.

In 2002, the investigation proposed a linear seven-stage progression in *Design Methodologies for an Ageing Population* (Wright 2002, fig. 3), presented at *Shared Visions, an International Higher Education Conference* and published in the proceedings. This paper was subsequently modified to consider how this method might be applied within the curriculum and published as *Designing for an Ageing Population, an Inclusive Design Methodology,* in the journal *Art, Design & Communication in Higher Education* (Wright 2004; see appendix). A

series of design theories were interrogated using simple diagrams to illustrate how these theories might be understood visually. The essence of the design method evolved into a linear model visualised as a diagram (2004, p.161). Incorporating diagrams into the discussion enhanced communication of the core ideas and allowed personal comparisons to be drawn against individual experiences of design practices providing more vivid and direct feedback.

Considering the diagrams and model proposed, it became clear that the linear structure did not reflect the iterative nature of the design process, or the material relationship within reflective practice identified by Schon (1983). The model had evolved to consider the fundamental process of design, rather than focus on the ageing population alone. It had moved to question how to design for situations beyond the immediate experience or knowledge of the designer, where inaccurate assumptions had the potential to detrimentally impact on the design outcomes. The ageing population became an expert user group through which to explore these scenarios, rather than the sole focus of the method. This evolution re-framed the issues and in doing so questioned the role of framing within the design process. If ageing was not the problem, what were the issues in the process of defining the problem, how might they be framed and what were the implications that follow?

At this point in time, the majority of research into ageing was associated with similar research into disability under the umbrella term Inclusive Design. Whilst Inclusive Design aims to address the needs of the greatest number of the population and aspires to mainstream acceptance, the emphasis on considering issues related to physical decline has maintained its association with disability and niche areas of design. To test the validity of associating the investigation with the terminology of Inclusive Design, the principles of the developing methodology were explored in collaboration with Judith Payling. Payling trained as an Occupational Therapist and researches disability in association with the DARE Foundation in Brighton, Design for Ability at Central Saint Martins College of Art & Design and The Helen Hamlyn Centre at the Royal College of Art, amongst others. A joint paper, *Active Reflection and the Design Process* (Wright and Payling, 2004; see

appendix) was presented at the International Conference *Enhancing the Curriculum; Towards the Scholarship of Teaching in Art, Design & Communication,* in Barcelona and published in the proceedings. The paper considered the implications of the social model of disability, emancipated learning and a model of active reflection developed by DARE, against a variety of theories of the design process.

This collaborative investigation established that insensitive understanding of complex social and physical issues often prompt solutions that are rejected by users and merely reinforce negative stereotypes. Achieving sensitive solutions requires information from both users and providers to be incorporated into the design process and for this information to be challenged for its value and accuracy at multiple points within the process. This changed the dynamic within the proposed design method. From the designer as recipient of a fully resolved brief, politically neutral in the design process and the deliverer of fully resolved solutions. To the designer as active participant negotiating the brief, challenging personal assumptions and those of others against authoritative evidence, whilst acknowledging that the solution may in turn create unforeseen problems. The re-proposed method incorporated a reflective cycle that acknowledged the complexity of the design process and the continual iteration of analysis, synthesis and evaluation at each stage of the design development process.

Whilst the Barcelona paper (Wright and Payling, 2004) focused on proposing a more inclusive design process, at the question session a designer rejected the idea of having time to consider so many 'extra issues'. Rather than considering a broader range of consumers as an opportunity, perception was firmly fixed on having to incorporate extra needs associated with niche users beyond the parameters of an ordinary design remit. Positioning the investigation within the parameters of Inclusive Design firmly located it with niche users and physical limitations. As the investigation focused on visual preferences and the design process, association with Inclusive Design was an inappropriate combination of issues. Further, it would have forced the investigation to address the reservations expressed about Inclusive Design from the design profession, which was beyond the remit of the investigation. In

addition, embracing Inclusive Design also exposed the investigation to the hostility expressed by those within the Inclusive Design community, who considered visual issues to be of only peripheral interest, to be related to fashion and therefore representing *'the antithesis of good design'* (Pullin, 2007, p.2).

Three significant issues emerged from the response to the Barcelona paper. Firstly, the power of language to frame perceptions. Secondly, the assumptions associated with initiatives such as Inclusive Design and thirdly, although reflective practice had been incorporated into the discussion of the design process it was done so without specifically addressing the relationship to material practice within design. These issues were addressed in two papers, firstly *Reflecting on Design for Social Needs* (Wright 2005; see appendix), presented at the 6th International conference of European Academy of Design in Bremen and published in the proceedings. Secondly, in a joint paper with Kathryn Hearn, Course Director BA (Hons.) Ceramic Design at Central Saint Martins College of Art and Design, titled *Utilising Different Learning Styles to Develop Curricula, Teaching and Learning in Design* (Hearn and Wright, 2005; see appendix), presented at the *International Conference, Design Education; Tradition and Modernity,* at Ahmedabad, India and published.

The Bremen paper (Wright 2005) discussed how to define what constitutes 'social need'. When 'needs' are contested the question becomes whose needs, when, where and why? Critical reflection was proposed as a method to interrogate and interpret experience and select evidence from which to construct the knowledge we use to define 'need' in an inclusive society. The model of design practice progressed to consider when and where to reflect and identified a particular characteristic of design as the central creative phase, defined by Cross as the *'design oscillation'* (1997, p.439 and 2006, p.78). This development recognised that the design process consists of a series of phases, which vary in their focus and activity but essentially include an interrogation of the brief, creative design oscillation and testing the proposal. Only by recognising the particular characteristics of design can an effective model of the design process be proposed.

To understand these particular characteristics, which are often associated with material practice, the joint paper with Hearn (Hearn and Wright 2005) discussed how different learning styles can be incorporated into the Ceramic Design curriculum, to recognise the range of student approaches to hands-on practice. The paper recognised that alternative thinking styles exist within studio practice. Acknowledging the differences in thinking styles increases student awareness of their personal approach to design. This also encourages the development of students' professional distance by interrogating the value of different learning styles in relation to their own and others practice. Such learning develops student confidence to become an emancipated designer. Students therefore understand that their individual experience and knowledge directly impacts on the particularity of their approach and thus on the designs they produce, whilst at the same time developing strategies to continually challenge, interrogate and refresh their practice.

This research contributed to a one-day seminar and workshop given in collaboration with Chris Smith, Principal Lecturer and Co-ordinator of Post-Graduate Research Students at London Metropolitan University. Smith is convenor of the Visual Arts Practice Research Group and editor of the Journal of Visual Art Practice. The seminar *Getting the level right: approaches to M-level supervision* (2006) was commissioned by the Centre for Learning and Teaching in Art and Design, London. The seminar considered the role of critically reflective design thinking within Masters level education in reference to the Quality Assurance Agency (QAA) characteristics. The audience drawn from a wide range of art and design institutions included tutors, supervisors and senior management concerned with Masters level education. Whilst the language of critical reflection was familiar to participants, the range of interpretations and understanding was significant, reflecting the range of Masters level art and design practice and experience in the United Kingdom.

Building on these experiences Hearn and Wright (2006; see appendix) presented *Traditional Practice; a Contemporary Challenge* at the International Conference *Enhancing the Curricula; contributing to the future – meeting the challenges of the 21st century in the disciplines of*

*Art, Design and Communication,* in Lisbon and published in the proceedings. Drawing further from teaching experiences on BA (Hons.) Ceramic Design at Central Saint Martins College of Art and Design, this paper reviewed the challenges of increased student numbers in limited studio space and the value of hands-on practice to avoid literally loosing touch with the subject. This paper discussed

> *'the progression from defence of a discipline, often conceived as craft orientated and perhaps, outdated in a global economy, to reinvigoration through recognition of the value of learning through the tactile and cognitive experience of three-dimensional design. Specifically, this paper discusses how, by a process of critically reflective analysis, Ceramic design has defined the transferable assets offered by the course to students who may be expected to apply their learning within a range of professional practice' (Wright and Hearn, 2006, p. 683).*

It is important to note that these students understood the transferability of their skills and the limitations. Whilst they are educated through the practice of working clay and have an intimate knowledge of the material, this knowledge allows them to embrace a wide range of professional practice. The reflective conversation with the material is central to this process.

In 2006 Hearn, Payling and Wright were invited to re-present the Barcelona and Lisbon papers at the *Learning and Teaching Conference* held at Chelsea College of Art and Design for tutors and senior management from the University of the Arts London. Presenting reflective thinking in contexts of Inclusive Design and Ceramic Design, to a range of practitioners who engaged with design at different levels of education and disciplines, provided valuable feedback about the nature of the design process. Whilst all had experience of the process and taught design through a wide range of practice, few considered the fundamental process, or had many opportunities to discuss alternative perceptions of the process. Knowledge was embedded in the subject; not just when applied to hands on practice but also within the process when separated from the material process.

In 2006 – 2007, Professor Margo Blythman, Director of Teaching and Learning at the University of the Arts London, commissioned Wright to work on *The Crit,* a small-scale research project, contributing to a larger research initiative. The role of studio critiques was examined for its contribution to teaching and learning in the design context. Part of the project aims was to test the proposition that the 'crit' is a useful reconstruction of professional engagement with clients. A studio 'crit' of Masters students working on individual projects in ceramic, furniture and jewellery was chosen as the focus of the research. A key finding was the importance of the ability of students to think on their feet and answer questions in response to the presentation of their work. To step outside of the intimacy of hands on practice and acknowledge that there may alternative perceptions to their practice. To adopt an 'objective' position to their designs, express ideas cogently and discuss unforeseen, or unanticipated perspectives, to reflection-on-action (Schon, 1983). The 'crit' offered opportunities to observe others fulfilling this activity and practice these skills first hand. With practice students became more confident and capable. Completing the research in a 'live' scenario, where tutors and students were all informed participants, enhanced the research, teaching and learning as the process was negotiated and discussed in a transparent and open manner. As the negotiation attempted to make explicit some of the implicit elements of practice, the discussion allowed all of the participants to consider and critique the design process and embedded assumptions. Often, physical gestures, or direct reference to artefacts would be used to illustrate, or explain issues that could not be easily verbalised. Reflecting on practice was difficult and required effort to translate personal knowledge of the development of artefact to others. Understanding the complexity of body language and verbalisation led to a reconsideration of Tomes assertion that *'talking design is design'* (1998, p.142).

In 2008 Wright, Hearn and Quinn developed a symposium, *Design Reflection in Action* (2008a; see appendix) for the international conference *Enhancing the Curricula, using research and enquiry to inform student learning in the disciplines,* in New York. The symposium included the presentation of an introduction to the session, three refereed papers and workshops for delegates. The papers included,

*Why Reflect?* (Wright, 2008a), *Something's Not Quite Right in My Minds Eye* (Hearn and Wright, 2008) and *The Need to See, A Reflection on the Three Dimensional Learning Process in Design* (Quinn and Hearn, 2008). Quinn is a design consultant and senior tutor at Central Saint Martins College of Art and Design. The symposia presented three perspectives on design reflection in practice. The domains of theory, teaching and learning, and professional practice were interrogated for evidence of the value of reflection-in-action within design practice. By considering each perspective, from its own position and as part of a conversation into reflective practice, each was enriched by the challenge of the others.

The development of the design method discussed in *Why Reflect?* (Wright, 2008a; see appendix) located contemporary design education within the historic development of education in the United Kingdom, supported by successive governments to contribute to the economic prosperity of the country. The revised method acknowledged that reflection in design includes both reflection-in-action and reflection-on-action as proposed by Schon (1983). These different forms of reflection were defined and located at specific points in the design process. *'The differences are key to understanding where and how reflection can be understood within design practice, and where and how it can be taught and learnt within design education'* (Wright, 2008, p.122-123).

Experiential learning was considered within a critically reflective design progression that recognised the value of alternating from conscious analysis, synthesis and evaluation, to unconsciously generating ideas in the creative design oscillation. Unconscious reflection-in-action is often associated with tacit knowledge embedded in material practice but rarely considered, or appreciated for its value within the design process when separated from material interaction. Or, more importantly, for teaching and learning, how vulnerable this central creative process is to poorly timed and generalised requests to 'reflect', when complying to this request requires a shift to conscious consideration and thus inhibits the process of creative design the student was asked to consider. In this context reflecting-on-action merely offers a post-rationalised report of what was happening when creative reflection-in-action was observed.

The design process is complex and represents a series of different forms of thinking and reflecting that allow the designer to step in and out of alternative frames of mind, to frame and re-frame scenarios to generate alternative solutions.

In the collaborative paper *Something's not quite right....* (Hearn and Wright, 2008, see appendix), students were asked to reflect on their progress at three critical phases. Firstly, to help diagnose which tutor methods were most appropriate for their practice. Secondly, to track weekly progress and thirdly, as an overview of the terms progression. Through making this process transparent and the basis for discussion we aimed for staff and students to recognise Brookfield's aspiration for reflection to help students to know; *'what I'm doing right now is creative and spontaneous, yet grounded in my experience. I know it's good and if need be I can tell you why'* (1995, p.47). Whilst it was impossible to draw broad conclusions from such a small sample, the staff and student feedback identified that reflection enhanced communication and the sense of ownership of the design process. Alternative applications of their design skills were perceived as transferable and that these opportunities were a positive addition to their hands on practice.

In *The Need to See; a reflection on the three-dimensional learning process in design (Quinn and Hearn, 2008)* the theoretical and educational concepts of practice were interrogated against the reality of professional practice.

Subsequent to the New York conference Hearn, Quinn and Wright were invited to present the key points and responses from the symposium to a cross-disciplinary research group at the Open University investigating embodied knowledge. We presented *Embodied Knowledge in the Craft of Design* (2008) and contributed a design perspective to the discussion, which included professional practice from nursing to architecture. This allowed Wright to examine responses to these evolving models in a context beyond the outside of traditional art and design arenas.

Following these projects Wright was invited by the National Arts Learning Network (NALN) to analyse an audit of experiences of

*Endangered Subjects, a review of practice at seven leading UK universities (Wright 2010b).* Endangered subjects were defined as those traditional subjects whose student applications evidenced a decline, for which there was a fragile employment sector and continued course provision was considered to be at risk. In addition to the audit, *A review of crafts practice by case study* (Wright 2010c) of the experience of graduating students from a range of these courses was completed and contextualised against contacts and references (Wright, 2010d) to form the basis of *Recommendations, Advocacy for Crafts Practice* (Wright, 2010a).

From the research that informed endangered subjects a further paper, *Crafting Sustainable Minds from Practice Based Education* (Wright, 2009; see appendix) was presented at the International Conference, *Making Futures; The crafts in the context of emerging global sustainability agendas,* in Plymouth and published in the proceedings. This investigation found that defending endangered subjects and learning through practice is complicated, because much of the knowledge on which these disciplines are based is embedded within the practice and experienced through haptic engagement.

> *'Whilst such implicit knowledge is recognised and valued by fellow practitioners, without explicit explanation and evidence many of the qualities that constitute excellence within in the crafts may seem opaque if viewed from alternative perspectives'* (Wright, 2010a)

The investigation identified two alternative perspectives. At the individual student level graduates expressed confidence and commitment to their craft practice. They had an intimate knowledge of material processes and considered their education as a transformative experience, sometimes fundamentally therapeutic. In contrast, at the institutional level endangered subjects suffered from a myriad of prejudices. They were perceived as offering limited research potential; as emphasising teaching although teaching was considered institutionally less valuable than research; as predominately attracting female students, often mature when colleges favoured younger students and as using an unprofessional or degraded terminology associated with domestic contexts or amateur participation. Consequently the traditional characteristics of the subjects confirmed perceptions of outdated values

and longstanding bias embedded within broader hierarchies of social power. Evidence was found to challenge each of these prejudices but the lack of a coherent, collective subject defence is indicative of an inward focus on materiality, rather than an outward consideration of external perceptions and the transferability of skills.

In collaboration with Simon Fraser, Course Director of MA Design; Ceramics, Furniture and Jewellery, at Central Saint Martins College of Art and Design, Wright drew upon the experiences of teaching and learning on this 'by project' Masters. *Only Connect, 21st Century Cultural Practice, Thinking and Making Across Continents* (Fraser and Wright, 2009; see appendix), presented at the Plymouth conference and published in the proceedings. The discussion considered a range of projects from around the world. These incorporated different design approaches to high craft and artisan practice from Brazilian ceramics, Thai Niello ware, Guyanese Wai Wai weaving, Botswana jewellery and many more. Connected by a concern for 'ethical luxury' these projects frequently had to re-contextualise individual perspectives on practice framed by local prejudice and a lost appreciation of craft knowledge.

Students used critical reflection in the material engagement element of the design process and to interrogate and reposition perceptions of the value of the product. Often this process includes making explicit many issues that would otherwise remain implicit within the practice. For example, the time required developing skills, the rarity of the material or the isolation of the makers. All of the issues that threaten endangered subjects in the United Kingdom were analysed and reconsidered as the qualities that might constitute 'luxury' and offer a premium return within a contemporary globalised market. This model requires the designer to take a more strategic approach to their design practice; to design the product, the process and to frame the perceptions by which the artefacts will be appreciated.

Re-contextualising practice is not a simple process, or without risk if the decisions made are based on poor research and limited knowledge. The implications of these issues were discussed in a joint paper with Fraser and Dr. Ulrike Oberlack, *Trends and Traditions, Negotiating*

*Different Cultural Models in Relation to Sustainable Craft and Artisan Production,* presented at *LENS The International Conference on Sustainability in Design Now,* in Bangalore (Fraser, Oberlack and Wright, 2010; see appendix). For example, in the craft context, non-design based organisations often promote the use of 'trend forecasting' as a way to re-position craft products for non-traditional markets. Sometimes there is a lack of specialist knowledge of the craft, its materiality, history, cultural context, or of the industries from which trend forecasting derives. There can be a failure to grasp the *'many implicit layers of understanding and unspoken complexities that confound expectations of a simplistic reading by practitioners from alternative systems or models of practice'* (Fraser, Oberlack and Wright, 2010, p.358). Critical reflection applied within the design process raises awareness of the implicit complexities of practice and an appreciation that similar complexity may exist in other areas where many values remain unspoken. Acquiring the habit of interrogating what is implicit and challenging assumptions that often fill the gap between unconscious actions and conscious explanations provides a strategic perspective to the design process. Developing the language to bridge this gap offers a narrative, which can translate these issues and enable effective working in cross-disciplinary teams and non-traditional contexts.

Considering the design process in a contemporary context, alongside the numerous applications and associations that impact on it and through which it is becoming increasingly influential, questioned a fundamental element of the proposed reflective design approach. The emerging complexity of design practice questioned the language of analysis, synthesis and evaluation. These three stages are often considered as the basis of the design process (Jones, 1992, p.63) and were clearly insufficient within these expanded contexts. To rely on the value of analysis presupposes that either, it is possible to analyse all of the influential factors or, that the selection of variables referenced is accurate and appropriate. The quality of synthesis and evaluation relies on the quality of the elements analysed. The desire for 'quality thinking' and association with rationality identified by Gedenryd (1998, p.35) is implied by the use of terminology but limited by the complex reality of the contemporary design context. Gedenryd's alternative suggestion of

'exploration, experimentation and understanding' (1998, p.102) allows for ambiguity within the language and action *'at the heart of the creative design process'* (Lawson, 1997, p.174), and the flexibility to incorporate conscious and unconscious reflection-on-action and reflection-in-action (Schon, 1983).

Through this process of feedback the investigation moved from anticipating a design tool to address a specific problem, the ageing population, to proposing a design process to address scenarios beyond the experience, or knowledge, of individual designers. This iterative process considered the theory of design against feedback from a range of practice. Using this process has implications and offers further opportunities to develop the cycle.

A central issue in considering the design process is that it is dependent on its context and this context is dynamic. For example, the theory on which the cycle relies is essentially Western in orientation and relies on Eurocentric references. In an increasingly globalised world, theories of design will embrace alternative ideas of design, different patterns of thinking and cultural norms. This process will partly be facilitated by the growing trend for cultural exchange led by student migration. While it is recognised that students have different learning styles they also carry educational expectations from their countries of origin. When perhaps eighty percent of a Masters student's life has been spent in education, it can be difficult to influence fundamental attitudes, deeply held habits and behaviour. These differences in expectations are evident when students are asked to design following an iterative path of development and report progress via a linear text submission. This task becomes more complex when the text is expected to conform to academic conventions based on traditional 'English' structures. Different cultures consider the structure of narrative and the relevance of context through different traditions. When the critical issues are often embedded in practice and rely on tacit knowledge the complexity is greater still. Recognising and managing different expectations can be a difficult and demanding process. The model of reflective practice developed in this investigation, aims to makes explicit the implicit assumptions in a design process. These principles have value in managing the cultural confusions, both

geographical and discipline specific, encountered in professional practice. Reflective thinking has value in design and beyond, in managing the increasingly complex and diverse areas of practice embraced by design.

Concepts of efficiency complicate the task of managing the design process. In education as in professional practice time is a precious commodity. Perceptions of efficient practice often consider the speed of the response. If speed is considered an issue, when deadlines are imposed, the concepts of analysis, synthesis and evaluation can appear an efficient progression. If design is framed as a problem based and solutions focused process, the issues to be analysed are dependent on the perception of the problem. Rapidly moving from concepts of problem and solution, through analysis, synthesis and evaluation, gradually reduces the elements considered. So if design for an ageing population assumes the principle issues are related to physical decline and these can be measured and quantified, these issues will frame the design solutions proposed. That we are more than the range of our physical limitations, or that products contribute to our perceptions of self within social contexts, are not included in this definition of the problem. The solution may work in a physical functional sense but can be rejected by those it was designed to help (Payling 1998 and McDonaugh 2010). Moving to Gedenryd's (1998) exploration, experimentation and understanding expands the range of issues considered, increasing the potential of design but also increasing the requirement to manage the process effectively. Knowing how much research is sufficient to explore and experiment in order to achieve new understanding requires knowledge. Knowing when conscious reflection-on-action is sufficient, allowing the move to unconscious creative reflection-in-action, is a skilful process. Only through experience can the confusion that accompanies expanding the range of issues beyond the usual choices, become a valued and recognised part of the design process. This requires an initial investment in time and a complimentary commitment to continually invest in intellectual capital to expand an individual's empathetic horizons (McDonaugh, 2010). Whilst life long learning is an aspiration to many, the reality can be demanding.

Investment takes commitment at every level, individual, institutional and professional. Whilst remaining aware that a good design process does not guarantee good design, or that all design students will become designers, let alone good designers. Critically reflective thinking is a transferable skill, acquiring a strategic approach increases the opportunities to apply this skill in a range of alternative scenarios and the flexibility to survive in a dynamic design industry and in a changing world.

### 6.1.5 OVERVIEW

The critically reflective approach was proposed in response to the literature on design, the findings from the interviews with designers, the visual questionnaire for consumers post fifty and feedback from a range of practice. Critical reflection incorporates different forms of reflection, which support the creative essence of design thinking within the design process. The approach is proposed as a model for practice as models have value in shaping perceptions of the world (Jerrard 2000, p.233), which then have the power to change our actions. As Moon observes; *'the description of reflection in terms of phases might be useful for facilitating reflection, while not necessarily being a representation of what goes on in the brain'* (1999, p.35). The proposed model supports developing critically reflective design thinking by visualising and structuring the process as a concept. Knowing what to look for, when and why allows designers to have a more informed reflective conversation, which acknowledges the value and differences of *'reflection-on-action'* and *'reflection-in-action'*.

Awareness of the process and value of reflection allows designers to understand their design practice as a series of linked activities, rather than disconnected projects and become sensitive to when it is productive to consciously *'reflect-on-action'*, or more productive to unconsciously *'reflect-in-action'*. Critically reflective design thinking encourages the designer to take control of the design process and continually invest in transferable intellectual capital to help form a deeper experiential learning approach with long term value, rather than rework existing concepts within doubtful ideas of efficiency. Emancipated designers are more fully aware of the relationship between their design

practice and the need to continually invest in new knowledge for increasingly complex professional practice in rapidly changing contexts.

If design is to remain relevant within an ageing population it must be responsive to changes within the social context. The ageing population presents opportunities to propose design solutions that are both socially responsible and economically sustainable (Preiser, 2001), essentially a transgenerational approach (Pirkl, 1994). Critically reflective design thinking enhances the design process by considering multiple perspectives within definitions of the design problem, the importance of the context and the creative central phase of design, prior to proposing and assessing the sensitivity of solutions.

The visual preferences of the ageing population were investigated from a design perspective in order to enhance the emotional, social and economic sensitivity of the design solutions offered and challenge negative assumptions underlying quasi-medical responses. However, merely pointing out the potential deficiencies of negative assumptions does not in itself offer solutions. The critically reflective approach prompts the designer to consciously challenge assumptions and seek out a range of evidence to ensure future actions do not unconsciously bias the design process and follow prejudicial beliefs. A critically reflective approach proposes that knowledge of, or access to, the numerous specialist models available to design is not always possible (Aldersey-Williams, 1999). By incorporating a more evidence based approach awareness is raised that: *'some data is always preferable to no data at all'* (Norman, 1999, p.25). Knowledge of the value of research and alternative models enhance best practice in design and bridge the potential gap between professional, perceptual and generational divides. Distance need not separate perceptions but rather enhance the quality of design possible from appreciation of differing perspectives and the value that each can bring to the process. *'Design needs to develop its own experimental methods'* (Norman, 2010) if it is to offer more than styling in the later stages of the development process. The value and potential of a critically reflective approach is from a more strategic position in the early stages of design when the 'problem' is being defined. This enables a shift in perceptions of an ageing

population from notions of niche markets and quasi-medical responses, to one of opportunity within a vast and expanding mature consumer market.

Essentially, critically reflective design thinking raises awareness of the context and of the potential of design. As Earl Powell, President of the Design Management Journal observed, design solutions are context dependent (1997, p.5). Twenty years later Tim Brown went on to propose that the context of design is changing (2007). Designers and clients need strategies to remain relevant. The way we think affects the processes we adopt and the products we design. Critically reflective design thinking offers a model by which to consider these issues from a design perspective that does not prescribe outcomes but rather aims to invest in the creative process, free from the limitations of design tools. Critically reflective thinking represents an analysis of alternative modes of thinking applied within the design process and to an emerging context in response to an ageing population. However, the fundamental issues addressed are not restricted to the ageing population but essentially focus on how to design for unknown consumers and increasingly saturated markets. A critically reflective approach consciously enriches the range of references consulted within the design process, which enhances the value of intuitive design decisions and the development of transferable knowledge as a consequence of a deeper experiential learning process. By critically reflecting on the implications and potential of design to be socially responsible, designers can defend an evidence based approach, where creative solutions contribute to more sustainable innovation.

# CHAPTER 7 – DISCUSSIONS, CONCLUSIONS AND FURTHER WORK

Contemporary design in the United Kingdom (U.K.) is essentially a youth orientated industry. As the population ages, there is a gap in knowledge and experience between younger designers and consumers post fifty. This investigation proposed that visual preference is associated with strong emotional responses to experiences and the product forms related to a particular time in early life. These emotionally driven responses reflect formative periods for preference that remain potent and inform intuitive choices throughout life. The importance of formative periods was supported by evidence from economics (Becker, 1996, p.3) and marketing (Metz and Underwood, 2005, p.174), emotional responses to music (Juslin and Vastfjall, 2008), psychological studies (Greenfield, 2000, p.62), physiological development (Miller, 1987, p.88), and more specifically from anecdotal evidence within design (Seymour, 1993, Mc.Nally, 1996). Essentially, the investigation proposed if formative periods for visual preference were identified, this information could aid the design of emotionally sensitive, age specific products for consumers post fifty. By considering the emotional needs within product choices, an age neutral approach for design emerged from the investigation into the formation of *'Visual Preference in an Ageing Population.'*

Three elements were initially proposed within the contribution to knowledge. First, the development of visual material and product images within visual questionnaire methods. Second, identify evidence of a statistical association between age and preference at specific times in life, subsequently expressed through intuitive choices. Third, use the findings to propose a design tool to address the issues of design for an ageing population. The first aim was completed and the second and third were developed in the light of the findings from the literature, interviews with designers and the visual questionnaire. Statistical analysis of the questionnaire identified two associations, a small statistically significant relationship between age and preference and a far stronger relationship between design related to time and preference. Comparing the statistical analysis to the product images revealed preference related to the familiarity of the visual characteristics of the product forms. This preference was

proposed as reflecting the 'contemporary essence' of product forms. These findings challenged the opinions expressed by the designers who assumed a decline in design interest post forty (Section 4.2.2, Qu.2.4), whilst supporting the concept of a formative period for product preference (Section 4.2.2, Qu.2.5). These findings suggested the 'problem' of design for an ageing population were related to perceptions and attitudes, rather than the reality of preferences related to age. To address these issues the emphasis of the investigation moved from proposing a design tool, which anticipated applying age specific criteria within design, to proposing a critically reflective approach to design thinking, to address the attitudes of designers. This chapter reviews the investigation (section 7.1.1) prior to proposing suggestions for further work (section 7.1.2) and final conclusions (section 7.1.3).

### 7.1.1 REVIEW OF THE RESEARCH

**Literature:**

The investigation focused on the concept of formative periods for visual preference, to bridge the gap between a youth orientated design industry and an ageing population, where products have emotional value within the social context. It was proposed that if formative periods were identified, the design associated with these periods would provide references for design practice free from stereotypical images of ageing. A review of the literature identified conflicting images of ageing as either a time of wisdom and wealth, or decline and dependency. The origins of these stereotypes were traced to challenge their validity within the contemporary context. In the U.K. the source of these attitudes originate from the Industrial Revolution when improvements in wealth and medicine resulted in significantly increased expectations of life. Modern product design developed within this industrial context and this shared history provided the time frame for the investigation (Chapter 2).

The population of the U.K. has been ageing for more than one hundred and fifty years (Laslett 1996). This long-term demographic change in the profile of the population has continued until today, *'there are 20.7 million people aged 50 years and over, over a third of the total UK population'* (ONS, 2008). With age discrimination legislation becoming law in 2006 (Age

Concern 2002) only recently have the implications of these changes begun to be widely appreciated.

In industrialised countries such as the UK, the time lag in awareness of the ageing of the population is partly due to an economic and cultural emphasis on youth for much of the twentieth century. Historically this emphasis was associated with concepts of industrial utility and fear of the expense of a growing, non-productive, retired population. This emphasis was entrenched by medicine associating ageing with disease. In the late twentieth and early twenty-first centuries, as medical advances improved both the quality of life and life expectancy, this continued emphasis is surprising. Particularly, as although youth culture is a powerful influence on society, younger consumers often borrow to sustain much of their purchasing behaviour, whilst;

> *'the total net financial wealth of people age 50 and over is of the order of £560 billion. This probably amounts to 85% of all such wealth'* (Metz and Underwood, 2005, p.21).
>
> The *'50 plus households spend around £250 billion annually, which equates to over 40% of national household spending'* (ONS, 2008, p.130).

For industries that continue to focus on youth orientated markets, there is a double jeopardy from diminishing consumers, who are credit dependent to support their purchases. As industry attempts to reduce exposure to risk, this strategy potentially represents a far greater danger than exploring the expanding market of the cash rich over fifties.

However, designing for an ageing population is not a simple process, *'it is impossible to slot older people into an all-embracing 'grey market.' ... Age is no longer an indicator of lifestyle: attitude is'* (Nicholson, 2001). It is surprising that this realisation has yet to be recognised by the culturally influential media of television and advertising, which appear to remain oblivious to the changing demographic context:

> *'Insiders' point out that part of the reason for ageism is that the average age of advertising copywriters is 26. ... [it is] much easier for them to create adverts for their peers than for consumers twice their age'* (Leonard, 2000).

This assumption can only be valid if there is a significant difference between the generations. This perception of difference, based on age, lay at the centre of the investigation. A growing consumer population aged over fifty, with financial independence, physical health and emotional wellbeing are largely served by a younger generation of designers with different expectations and life experience. The accumulation of negative social beliefs and outdated medical assessments of later life as a time of disease, dependency and decline, have extended the gap in empathy and knowledge between designers and consumers. The implications of such negative assumptions are pervasive as they contribute to social stereotypes. The impact of these stereotypes is not limited to negative attitudes, they have a dangerous and direct impact on the health and wellbeing of individuals. Negative assumptions are damaging to health and have been shown to reduce expectations of life by over seven years (Levy, 2002, p.268).

In design negative assumptions of ageing are particularly damaging as, *'no single definition of design, or branches of professional practice such as industrial or graphic design adequately covers the diversity of ideas and methods gathered together under the label'* (Buchanan, 1992, p.5). Whilst the range of use for which design practices are applied has expanded greatly (Friedman, 2003, p.509), the *'literature on design is vast, yet mostly inconclusive'* (Design Council, 2007, p.3). This lack of clarity contributes to the practice where the creative industries are influenced by youth orientated peer review, which sustains outdated cultural beliefs.

Negative assumptions directly influence actions because they often rely on intuitive responses, with limited recourse to independent evidence within the design process. Left unchallenged, negative perceptions of ageing prompt quasi-medical design responses for an ageing population (Barber 1996). *'As those who are adaptable impose inflexibility on those with limited ability to adapt'* (Payling 1998). As consumers reject such products as inappropriate and insensitive, there are negative economic (Lloyds Bank, 1997), social (Laslett 1996) and emotional implications (Lovestone, 1996). The investigation proposed, by exposing the foundations of negative assumptions, their validity within the contemporary context could

be challenged and replaced by a positive, age neutral response within design.

Contemporary consumers are more than the sum of physical limitations, especially as we live *'in a society enmeshed in its own cultural artefacts'* (Rose, 1992, p.8). Socially sensitive consumers expect more than physical functionality from products. As Green observes: *'Pleasure does not subsume usability, nor does usability alone generate pleasure'* (Green, 2002, p.3). However, research into understanding how visual forms influence perceptions of pleasure has been limited (Berlyne, 1974, Crozier, 1994, Csikszentmihalyi, 1995, Bruseburg and McDonaugh, 2010). Studies specifically focused on the preferences of consumers post fifty often hypothesise that preference changes as a consequence of physical decline associated with ageing, for example, changes related to a decline in visual acuity (Karatza, 1995) and perceptions of colour (Luck, 2001).

The investigation proposed an alternative approach, to test the potential of formative periods for visual preference in early life to influence choices post fifty. What if the preferences of consumers related to design forms associated with intense emotional experiences in early life, rather than choices based on later physical decline. In this scenario time and the social context, rather than age and individual physical deficits, would be the influential factors. The focus in design could move from an emphasis on compensating for decline from ageing, to propose an age neutral approach based on inclusive principles: *'that both cater for the specific requirements of older people and also appeal to other age groups'* (Foresight, 2000, p.20). This perspective, based on positive perceptions of ageing, supports Woudhuysen's claim that: *'the challenge with design for older people is not older people, but old ways of thinking'* (Woudhuysen, 1993, p.46).

**Methodology:**

Testing Woudhuysen's assertion, that the challenge was associated with design thinking rather than 'older people', defined the rationale for the methodology. Whilst the literature identified the background issues it also clarified the focus for the investigation. It was essential to define the relationship between the designers attitudes and perceptions of 'older' consumers, the real visual preferences of consumers post fitly, and

propose a way to bring these elements together within a design context (Chapter 3).

**Interviews:**

To understand the design perspective a series of semi structured interviews with leading designers were completed. These interviews explored their working environments, perceptions of consumers, the concept of formative periods, visual references used within the design and production process, and the validity of proposing a design tool (Chapter 4). Interviews with designers were an essential element of the research. On reflection, it is possible that in the design of the investigation and selection of the literature there were areas of unintentional bias. By adopting a design approach, there may have been an assumption of design neutrality (Dunne and Raby, 2001, p.271) within a problem solving perspective (Margolin, 1997, p.230). This approach initially defined the design tool as a method to apply the findings and address the 'problem' of insensitive product design for consumers post fifty. Interviewing the designers addressed this potential for bias by grounding the literature within the reality of contemporary professional practice. The interviews provided a real design voice, in contrast to sound bites from interviews, or the carefully analysed reflections on design referenced from existing research. Interviewing the designers provided a balance to any unintentional bias from personal experience of design.

Ten interviews were completed. The interviews were planned to continue until there was sufficient agreement or, it was clear that agreement was not possible. In practice ten interviews were sufficient to identify many similarities and some interesting variations in opinions.

The designers worked in predominately youth orientated, male dominated environments in a range of organisations of different sizes, although essentially they all worked in small teams of less than ten. Woudhuysen's observation appeared to be confirmed, as the designers considered interest in design almost ceased post forty. These responses were surprising as the designers had accurate knowledge of the spending power and the financial potential of consumers post fifty. These apparently contradictory responses were an early indication that what people say and do can be

complex. As Oppenheim warns, attitudes are not guarantees of behaviour (1992, p.176), and as Zaltman noted, *'what people say and think are very different from what they actually do. There are unconscious processes at work'* (1999, p.7). In response to these findings the visual questionnaire (Chapter 5) aimed to identify unconscious processes within intuitive visual preferences, free from overly considered notions of socially defined taste.

**Visual Questionnaire:**

The idea of the visual questionnaire developed in response to a number of converging issues. In recent years the measurability of user-centred design and a focus on usability and interaction (Kalviainen and Miller, 2005, p.5) have limited attention on visually orientated methods. The rise of the internet has increased consumer familiarity with making design decisions based on the visual appearance of products (Buseburg and McDonaugh, 2010). The emotional functionality products convey has been identified in the construction of individual identities within the social context (Csikszentmihalyi and Rochberg-Halton, 1981, p.50). In addition, there has been an increasing awareness of the role of the unconscious (Douglas 2007) and tacit knowledge (Polanyi, 1966, Bowen, 2007) in decision making. Whilst the use of visual images has been recognised as it offers the most effective way to communicate to a range of different audiences (Porter et al, 2005). Together, the limited interest in visual methods, consumer familiarity, recognition of the emotional value of products, the role of the unconscious in decision making and the efficiency of visual communication, supported the idea of a visual questionnaire as a contribution to questionnaire methods. As this proposal incorporated an element of innovation, the visual element was balanced against more traditional question techniques.

The visual questionnaire was designed in three sections, Section 1 asked for personal details, Section 2 visual preferences and Section 3 issues relating to purchase decisions. Personal details in Section 1 were kept to a minimum by asking for the respondents sex, age and postal code. The sex of the respondents was not a primary issue but the interviews with the designers identified male dominance in the product design profession. In comparison, as the population ages it becomes increasingly female dominated. If there were female related preferences this information would

have to be factored into any proposals and so this factor was included as an analysis variable. The other analysis variables were by age, five year non-overlapping categories from fifty to seventy five years, the parameters of the investigation. The final personal element requested the respondents postal code, which allowed a geodemographic analysis, combining geography with census data.

Section 2 of the questionnaire aimed to identify formative periods for visual preference. It was proposed that intuitive responses to visual images of products, that represented the life experience of the respondents, might reveal preferences related to product forms from early life and be indicative of a formative period. The respondents were asked for rapid responses for their most 'liked', a 'neutral' and most 'disliked' choice from images representing fourteen interior product categories. Each product category had images from each of the design decades 1930 – 1990, the lived experience of the respondents. As the use of visual images in questionnaire methods was innovative, it was balanced by an additional set of text based questions to compare against the visual responses. These text based questions in Section 3 asked for responses relating to visual preference, the form, function and additional factors considered in decisions to purchase products.

As a result of the pilot process within the design phase of the questionnaire it was found that by limiting the number and complexity of questions the response rate improved. Limiting the questions asked also reduced the opportunity for respondents to consciously consider their responses and thus reduced the opportunity for responses to be influenced by perceptions of socially constructed taste. Balancing the visual question against more consciously considered text questions, and providing a space for additional responses, the respondents had a range of opportunities to express their opinions. Similarly, the design of the questionnaire booklet, separate computer scannable response sheet and stamped addressed envelope simplified the process of responding. This was an important consideration as the opportunity to follow up or send reminders was not available.

The questionnaire was sent in batches of fourteen and twenty four to nationally distributed groups of the University of the Third Age (U3A), with

letters of introduction from the National Administrator Ms. Lin Jonas and the investigation. Of the 5,000 questionnaires sent, 2,772 were completed and returned, a response rate of fifty five per cent, more than the best estimates predicted at the design phase of the investigation. The majority of respondents were aged between sixty six and seventy years, although all age categories were represented in the responses. An additional seventy five year plus category was added to the analysis in response to questionnaires completed by respondents. The response rates and range of respondents confirmed consumers post fifty are interested in design and discriminating in their choices. The post code analysis by Ms. Ellen Bone of CACI Information Services validated the sample within the parameters of the research by age, sex, financial and social status.

In practical terms the value of the questionnaire was confirmed by the efficiency of the distribution, response rate and transfer of the data ready for analysis. In methodological terms the design, distribution, quality and quantity of responses and the range of analysis techniques possible from the findings supported the value of using visual images in questionnaire methods. The use of visual images in questionnaire methods is proposed as the first element in the contribution to knowledge.

**Analysis:**

The second element of the contribution to knowledge proposed identifying a statistical relationship between age and preference. The visual questionnaire was designed to identify formative periods related to early emotional responses associated with product forms. Whilst preference is subjective for the concept of formative periods to be supported, quantifiable evidence was considered important as it offered an objective measure. This initial choice of measurement reflected issues within design research and the design community. For although in everyday practice subjective responses, or intuition, are central to design (Satherley, personal interview, 11.06.1998), in design research there has been a desire for rationality and *'good thinking'* (Gedenryd, 1998, p.38). Against reservations based on the 'flexibility' of statistical interpretations, the dominance of the medical model within Inclusive Design supported the aims of a quantifiable measure. Whilst analysis of the findings identified a small statistically significant relationship, which addressed the issues set out in the initial plan for the

investigation, it was insufficient to support the concept of formative periods within design practice. However, the quantifiable nature of the analysis provided an excellent basis for further interrogation of the data.

Further analysis of the products selected revealed a second, stronger preference, where the three most popular selections represented 73.8% of most 'liked' and 78.8% for the most 'disliked' selections. Despite differences of up to thirty years between the respondents ages, on average they expressed similar preferences related to the last thirty years of design. This represented a strong dislike for the 1970s and a positive preference for the 1980s and 1990s. However, there were variations within these averaged preferences, for example, the 1990s living room achieved a disproportionately high 71% in the most popular selection. To understand the reason for these variations the statistical data was compared to the visual images.

By analysing the relationship between the data and the visual images it was possible to identify continuums of preference from most liked, through neutral and on to most disliked, for ten of the fourteen product ranges. Within these selections the percentage of preference for each element in the continuum was relatively consistent. In the other four product ranges there were variations in preference, which identified issues within the selection of images. Interrogating the variations identified elements within the images that prompted recommendations to refine the process of visual selection with questionnaire methods. Comparing the products at the most 'liked' and most 'disliked' ends of the preference continuums identified a preference for the most familiar form of the product in the contemporary context and dislike for those forms most dissimilar. This preference was proposed as representing the 'contemporary essence' of product forms.

The contemporary essence represents a preference for product forms considered preferable by the majority of the respondents and reflected product forms contemporarily familiar at the time of the questionnaire. This preference is defined by an equally strong dislike for products considered 'old fashioned'.

The unconscious responses in Section 2 of the questionnaire identified a significant degree of design interest and awareness from the design preferences and values expressed. However, in the text-based questions in Section 3, the same respondents consciously expressed a relatively low value for the qualitative visual aspects of design, compared to the quantifiable factors of price and function at the point of purchase. Analysis of 'missing' responses within the questionnaire also supported these prioritises. The more important a factor was considered, the fewer responses were missing. Visual preference is emotionally important within subconscious choices. Whilst at the point of purchase these preferences may be moderated, or post rationalised by a range of consciously considered and more easily rationalised factors such as price, durability and usability. The conscious prioritisation of these factors by consumers is not as simple as they might first appear if asked for explicitly. Unconscious processes, reflecting preferences defined within a social context, affect conscious choices.

Visual preference was proposed as reflecting an unconscious awareness of the design forms related to qualitative elements, reflecting emotionally valuable functions within social communication. If products possess value as social markers, reflecting norms of preference (Becker, 1996, p.225), these may translate into emotionally driven preferences within the individual. A high degree of awareness of visual design characteristics reflects a continued perception of value related to the social use of products to communicate. As with oral language, appreciation and understanding of the role of products within social communication is learnt in the early years and remains potent throughout life. The emotional value of visual language in social communication maintains the high degree of design awareness identified.

The desire to purchase products for their emotional value in social communication, based on their visual design characteristics, is limited not by age but rather by economic and social flexibility. Economic flexibility is related to consumers existing purchases accumulated through time (Becker, 1996, p.37). Younger consumers are more flexible in their visual preferences because they have less invested in existing products and their personal environment. The relationship is defined by economics, rather

than issues directly related to age. The role of economic and social flexibility in purchase decisions connects the assumption that 'fashion' is for the young (Levien, personal interview, 11.06.1998) and the analysis of a more stable 'contemporary essence' for consumers post fifty. Younger consumers are motivated by the desire to differentiate themselves from what they consider to be their natural opposition, 'old fashioned' products and 'older' consumers. Consumers post fifty represent an economic opportunity for design investment by favouring a high quality contemporary essence within product forms. Products such as these possess longer life cycles and offer a longer period for producers to achieve a return on their investment. Investment in design and the contemporary essence should stimulate motivation to purchase innovative and economically sustainable products. Products which satisfy emotional needs by maintaining their ability to resonate with and reflect social norms within contemporary design preferences.

Whilst the visual questionnaire responses challenged the notion of age as a legitimate criterion within design, they supported an increase in investment for design for an ageing population. Investment to stimulate demand for an improved contemporary essence, for consumers sensitive to the social values products communicate and who possess a substantial level of existing investment in their personal and social capital (Becker, 1996, p.4). As consumerism is an age neutral concept and younger consumers borrow in order to satisfy their desire to participate (Buck, 1990, p.50), consumption saturation increasingly occurs early in life. An improved contemporary essence, with attention to function, price and quality, represents an economically, socially and emotionally sustainable design preference, for an increasingly age neutral consumer.

From the perspective of the investigation, to propose an expansion of design investment for ageing populations, who are negatively assumed to have limited interest in design by designers and by themselves, may appear irrational. However, as the questionnaire respondents illustrated, with a high degree of design awareness and the financial and emotional capacity to respond positively to design, the perception of risk may be overstated.

From the perspective of design, a preference for the contemporary essence of product forms, rather than those associated with a particular time in the past, mean that consumers cannot be defined by their age. The 'problem' is not located in the age of the consumer but the designer's perceptions of ageing and the preferences they associate with the ageing population. This observation moved the focus of the investigation from proposing a design tool to overcome the 'problem' of designing for an ageing population, to proposing a critically reflective approach to design thinking to challenge inaccurate assumptions within the design process.

**Critically Reflective Approach:**

The investigation developed from a focus on problem solving and asking WHAT? WHO? and HOW? (Anttila, 2000), to consider the assumptions in definitions of the 'problem' of design for an ageing population. The investigation became critically reflective to consider the WHY? within the design brief. This proposal was refined through an iterative process of presentations, feedback, reflection and amendment via international refereed conferences and publications, and an extensive range of undergraduate and post graduate teaching at Central Saint Martins College of Art and Design and the London College of Communication, University of the Arts London.

The shift to a critically reflective approach emerged in response to the realisation that knowledge in itself was insufficient to change design attitudes and behaviour. The designers interviewed and U3A respondents revealed a complex mix of responses to the idea of design for an ageing population. In a broad view of the population the designers considered interest in design almost ceased post forty, although when asked specifically were very positive about designing for 'older' consumers. The U3A respondents expressed a high degree of interest in and discrimination between the product choices based on their visual characteristics, whilst consciously considering issues relating to the form of the product as less important against function or price. When asked explicitly about design issues the designers expressed interest and the U3A respondents appeared not to. Only by considering the unconscious processes at work did a balanced and productive perspective emerge. The focus moved from considering the 'problem' of design for an ageing population, to how to

design emotionally functional responses for saturated consumers, with different life experiences and expectations. From a fixed idea of the ageing population defined by disability, to one in constant flux within the ebb and flow of social change. This shift reintegrated consumers into an inclusive perspective post fifty and recognised the power of the subconscious to define choices based on emotional responses.

This shift in focus raised the question, how to affect change in the behaviour and attitudes of designers so that emotionally inclusive products are designed to meet the needs of a range of consumers irrespective of age. Educational research found providing information, as in lectures or literature has limited value compared to learning by doing or teaching others (Woods, 2004). If designers are to remain relevant it is essential to develop a professional practice that continually facilitates an open minded and ongoing process of learning. This requires a critically reflective perspective to challenge assumptions and temporarily allow *'judgement [to be] suspended during further enquiry'* (Dewey, n.d., p.13). This period of 'suspended judgement' provides the opportunity to explore the ambiguity within the language and actions *'at the heart of the creative design process'* (Lawson, 1997, p.174). Schon (1983) observes a reflective approach offers alternative modes of thinking and acting within the creative design process. Reflection-on-action, draws on previous experience, recognises the ill-defined nature of the problem framed within personal conceptions (Smith, 2001), whilst reflection-in-action relates to thinking on our feet (Smith, 2001) making intuitive responses.

Schon's two modes of reflection define different ways of thinking. Reflection-on-action is a conscious process, whilst reflection-in-action is unconscious and appears most effective *'where people have to make difficult choices based on large amounts of hard to assess information'* (Douglas, 2007, p.45). Whilst Schon's research was based on observation, recent research into the functions of the mind have revealed *'experimental evidence for something we all instinctively know, that subconscious thinking is the source of our inspiration, it is central to creativity'* (Douglas, 2007, p.45). The conscious and subconscious in this context refers to the ability to make rapid intuitive decisions and is thought to derive from the adaptive unconscious. This should not be confused with the unconscious described

by Freud (Gladwell, 2005, p. 11) but is thought of more as a computer, able to make multiple decisions intuitively. Although this comparison is misleading in the sense that computers do not have feelings and emotions, which are central to our ability to choose (Lehrer, 2009, p.24) and reflect on our actions.

The critically reflective cycle draws on a combination of models from education and design. Critical reflection acknowledges experience shapes how we see the world (Greenfield, 2000, p.65) and that design responses can never be neutral (Dunne and Raby, 2001). The cycle incorporates three phases of reflection, two phases of reflection-on-action either side of the creative centre of design and reflection-in-action. The two phases of reflection-on-action adapt Gedenryd's (1998) 'exploration', 'experimentation' and 'understanding' to structure the process and incrementally change attitudes and behaviour. The change comes because;

> *'reflection involves not simply a sequence of ideas, but a consequence – a consecutive ordering in such a way that each determines the next as its proper outcome, while each in turn leans back on its predecessors'* (Dewey, 1859 - 1952, p.2,3).

Information acquired in each cycle is transformed into transferable knowledge in preparation for the next. This cycle is not proposed as a *'representation of what goes on in the brain'* (Moon, 1999, p.35) but rather to help facilitate an enhanced reflective process.

The move to a more reflective response was, as Cross observes of design research, a natural progression in response to the investigation and consideration of the findings (1984, p.x.). The critically reflective approach emerged from a more informed awareness of the issues relating to design for an ageing population. Critical reflection consciously interrogates assumptions to search for evidence to enhance the intellectual capital available to the designer in three significant ways.

- Firstly, the cycle requires evidence to challenge assumptions and inform the design process to reduce the impact of bias.
- Secondly, by consciously practising reflection-on-action the designer enhances their ability to incorporate new knowledge into reflect-in-

action, expressed as tacit knowledge, and thus enrich intuitive responses.

- Thirdly, by consciously practising verbalising the issues within a structured process and making explicit the range of actions completed within the design process, designers increase their capacity to defend decisions.

Increased awareness allows a more strategic contribution to the multi-disciplinary teams required for complex problems. The model for critically reflective design thinking is proposed as the third element in the contribution to knowledge (Chapter 6).

### 7.1.2 SUGGESTIONS FOR FURTHER WORK

As the investigation addressed three elements within the contribution to knowledge, each simultaneously generated thoughts for further work:

1. **The development of visual material and product images within visual questionnaire methods.**

Two significant areas for further work derive from issues relating to the administration of the questionnaire and the use of visual images within design research methods.

Firstly, at the time of the design and administration of the questionnaire, finding the visual images, printing and distributing the questionnaire, collecting and scanning the response forms was a laborious and time consuming process. The printing alone generated more than two cubic meters of paperwork. Future work to develop this technique would have the advantage of significant changes in digital imagery and internet access, making the design of the questionnaire, administration to respondents and retrieving the data a far simpler process. Whilst an online version of the questionnaire survey would have an impact on the selection of the respondents, it would be significantly more flexible and sustainable as a method.

As issues of sustainability become acute it is increasingly important for research methods to reflect and respect these issues in relation to design. A more focused and sensitive use of resources within research associated with design, which reflect a more informed appreciation of the emotional

value products convey, raises awareness of the value of a more reflective approach to mass consumption. These issues are increasingly important as Chapman tells us: *'Over 90 per cent of the resources taken out of the ground today become waste within only three months'* (2005, p.8).

Secondly, the use of visual images and the positive response rate for the questionnaire addressed Robson's concerns that questionnaires often obtain limited responses if they are considered boring by the respondents (2002, p.293). In addition, the range of analysis techniques available from the data, particularly the visual elements, contribute to the growing range of design based methods. This development is necessary if these techniques are to achieve a critical mass and recognition. So that design research and designers have a research language sensitive to design and the increasing range and complexity of its applications and associations (Rust, 2003, Bowen, 2007, Wood et al, 2009).

Whilst great care was taken in defining the process of selecting the images, variations within the analysis identified how this process could be refined. Visual methods have the advantage that the analysis provides visual evidence directly transferable to the design context, reducing the opportunity for the evidence to be manipulated by inaccurate assumptions or unconscious bias. As visual analysis becomes a more recognised methodology (Van Leeuwen, 2000), the sensitivity and technical familiarity of the method could be applied to the needs of an increasingly diverse consumer market.

The benefits of using alternative methods were evident as the rapid responses to visual images in Section 2 of the questionnaire provided an interesting contrast to the traditional text based questions in Section 3. Zaltman suggests that traditional questionnaires are often inaccurate measures of real preferences because they require conscious consideration, as opposed to the predominately unconscious act of choosing (1999, p.7). If visual selections represent largely unconscious or intuitive decisions, then further work to develop the use of visual questionnaires offers a more direct measure of preference. An accurate understanding of the role of preference in product choices enhances the potential to design products that satisfy emotional needs and reduce the

rate of rejection from alienated consumers. These issues reflect the potential for more accurate methods to analyse preference and contribute to a more sustainable role for design.

2. **Identify evidence of a statistical association between age and preference at specific times in life subsequently expressed through intuitive choice.**

Potential to develop analysis techniques follow closely those related to the development and use of visual image methods. Particularly as the techniques for using visual images offer opportunities for developing qualitative methods of analysis, to compliment the quantitative measures available by the large scale internet based surveys now available.

The investigation identified two statistical associations. The first, was a small statistically significant association between the age of the respondent and their visual preferences. However, the limited value for these findings within design practice makes further work in this area minimally productive.

The second association identified a far stronger preference proposed as representing the contemporary essence of product forms. Preference for the contemporary essence was proposed as relating to a preference for product forms reflecting a relationship to social norms. This capacity to make choices based on their social value, is an interesting area for further work as it offers the opportunity to reframe design for an ageing population (Schon, 1983, p. 80). Exploring the idea of a preference for the contemporary essence offers insights into emotional functionality to compliment physical utility. Linking these issues within user-centred methods moves design towards a more inclusive and age neutral approach.

Although this is an obvious area for further work, products that satisfy these criteria are few and far between, for example OXO Good Grips range of kitchen equipment and the Ford Focus car. Products such as these need not advertise their excellence against claims for design based on 'Inclusive Design' principles defined against disability. Rather, on their excellence for a broader range of user needs sensitive to the physical and emotional functionality of products in use, within existing domestic environments.

The questionnaire was designed to access the visual preferences of the ageing population. However, it offers a method which is applicable to any segment of the population where the designer is unfamiliar with the subtleties of their visual choices and emotional triggers (Kalviainen and Miller, 2005, p.5). In the visual questionnaire it was important to strip away the contextual issues of people, places and products in use to avoid particular areas of bias. Further work into preferences, where the values of contextual elements were relevant, could explore layers of meaning within these relationships. Where the emotional sensitivity of design contributes to the *'secret functionality'* (Grinyer, personal interview, 07.07.1998) of products and style has emotional value beyond a restricted vision of fashion, or allegiance to specific generations.

**3. Use the findings to propose a design tool to address the issues of design for an ageing population.**

The investigation reassessed the value of the anticipated design tool prior to proposing a critically reflective approach for design. This approach reflected analysis of the interviews with designers and the findings of the visual questionnaire. However, this proposal was based on the particular design perspective of the investigation to the issues raised. This perspective benefited from knowledge of research into ageing but did not originate from, or focus on, changes in design required as a consequence of the physical changes associated with ageing. Rather, the investigation looked for the influence of formative experiences from early life, as guides to visual preferences in later life. A starting point which looked at ageing, not as a series of 'problems' for design to accommodate but rather, recognising that preference may develop in response to a lifetime of experience.

Whilst the investigation rejected the idea of ageing as a series of 'problems' waiting for design 'solutions', the design based approach unconsciously framed initial ideas of the reflective cycle within problem based and solution focused terms. This approach linked conceptions of the problem and solution by a process of analysis, synthesis and evaluation. This frame of reference was based on an understanding of the design process structured by reference to ideas of efficiency, rationality and 'good thinking'. Within

this understanding of design, translating the concept of reflection into the design thinking process was more easily achieved in the abstract, than as action in practice. Only by applying the principles to a range of audiences and situations in practice, teaching, conference and publication feedback has the reflective process become a credible proposal. There is a danger in assuming that this sense of viability is stable and would not benefit from ongoing reflection and further work to challenge and test ideas. Not least because:

- Professional language and shared knowledge should be tested against alternative disciplines to challenge assumptions that become habituated into fixed ideas, rather than accurate reflections of reality.
- Reflective practice provides design thinking with a positive and open-minded perspective from which to contribute to disciplines beyond design. Explicitly understanding the value of reflection-on-action and in-action to stimulate alternative ways of thinking for professional practice. Applying this perspective beyond design may test its value and bring new knowledge from alternative disciplines back into an enhanced view of design practice.
- Neuroscience is unlocking the secret working of the mind to provide evidence against which to test theory. Models help to reflect but do not map the reality of the process itself. Evidence based understanding of design thinking may moderate the reflective cycle, or propose alternative metaphors as the basis for further work.

This perspective locates the investigation within the broader reflective approach to design research (Cross, 1984, p.x) and also within social moves towards an age neutral response to an ageing population (Foresight, 2000). The design of the investigation and interpretation of the findings were context dependent. Further work to test the value of the critically reflective approach would add to research into the special characteristics of design thinking (Cross, 2007) and its potential within a more strategic approach to design.

### 7.1.3 CONCLUSION

The investigation into the formation of *'Visual preferences in an ageing population'* contributes to research methods, generates evidence of design interest and sensitivity of consumers post fifty and proposes a critically reflective approach for design. This approach supports an enhanced design process to address complex, multidisciplinary applications of design in a contemporary, strategic and sustainable manner. These findings emerged by challenging negative assumptions of ageing that prioritise physical functionality within design responses for an ageing population. This approach reflects the long term association between ageing, disease, decline and dependency prompting a medical model to address the needs of an ageing population. Today these assumptions are outdated and inaccurate but the cultural lag in attitudes continue to infuse negative design responses.

To challenge this focus on physical functionality the investigation considered the concept of formative periods for visual preference reflecting emotional responses to products. Culturally it is often assumed that the preferences associated with the late teens and early twenties remain popular throughout life. Evidence for formative periods comes from a range of disciplines including anecdotal support from design. The investigation proposed that if identified, this preference would provide visual references to bridge the gap in life experience and expectations between younger designers and consumers post fifty.

The investigation reviewed the historical development of the ageing population within the industrialised UK context. Where the generation of wealth was matched by improvements in health and life expectancy, and design shaped the desires of a newly urbanised and socially competitive consumer society. Within the two hundred years of historical development formal consideration of the implications of design has been limited. This omission leaves designers ill-equipped to design for consumers with life experiences and expectations different from their own. The validity of these assumptions had to be tested within the professional design context in order to design a visual questionnaire, where the findings and recommendations would have relevance for design.

A series of semi structured interviews with contemporary designers grounded the review within the perspective of professional practice. These interviews informed the development of an innovative visual questionnaire incorporating ninety-eight images of domestic products and interior design. More than two thousand seven hundred members of the University of the Third Age responded. The analysis identified a small but statistically significant association between age and preference, although this was insufficient to support the concept of a formative period for visual preference. The analysis also identified a far stronger preference, related to the most contemporarily familiar form of the product and proposed as representing the 'contemporary essence' of product forms. Preference for the 'contemporary essence' identified a relationship with time, rather than age and was proposed as reflecting a sensitivity for the emotional functionality products possess within the social context. These findings were reconsidered against the review of the literature and interviews with designers to propose a critically reflective approach for design.

The critically reflective approach aims to enhance the sensitivity of the design process, by exposing the assumptions on which design thinking and methods proceed and evaluate solutions. From evidence based design and a positive understanding of the diversity of consumer needs, the critically reflective approach supports creative design that acknowledges the value of alternative modes of reflective thinking. Conscious reflection-on-action satisfies desires for evidence of rationality and good quality thinking, whilst unconscious reflection-in-action supports the value of tacit knowledge in creative design. This combination of reflective thinking modes aims to provoke innovative and sustainable design responses that recognise the complexity within the statistics of an ageing population.

# APPENDIX 1.
# INTERVIEW SCHEDULE AND INFORMED CONSENT

### INTERVIEW SCHEDULE WITH DESIGN PROFESSIONALS:

| | |
|---|---|
| 01.06.1998 | Jackie Piper |
| 02.06.1998 | Nick Rhodes |
| 10.06.1998 | Chris Eckersley |
| 11.06.1998 | Richard Satherley |
| 11.06.1998 | Robin Levien |
| 15.06.1998 | Martin Wharmby |
| 24.06.1998 | Pauline Amphlett |
| 30.06.1998 | Martin Darbyshire |
| 07.07.1998 | Clive Grinyer |
| 13.07.1998 | Hilary Dalke |

### INFORMED CONSENT PROTOCOL:

The interviews were pre-arranged and held in quiet areas of the designers' offices. The interviews were structured by briefly introducing myself as the researcher. The area of the investigation was outlined but the focus of the research, the ageing population, was initially withheld to avoid biasing the responses. Whilst there were no direct ethical issues involved in the questions, the concept of informed consent was discussed and the designers were asked to read and sign an informed consent prior to answering any questions. The informed consent was presented on college headed paper and outlined the context and nature of the interviews. The consent included; an estimation of the time required, a broad description of the scope of the questions in relation to the interviewees professional design experience, agreement that the interview could be recorded, that their participation was entirely voluntary, they could withdraw at any point and agreed that the data could be quoted in research documents. Contact details were provided should they need to talk to the researcher at a later date and a second copy of the form was given to the designers for their reference and records.

At the end of the interviews, after the semi-structured questions were completed and the aims of the research were clear, the designers were

asked if there was anything they would like to add to allow an opportunity to amend or clarify their comments. In the light of their having answered the questions, the designers were once again asked if an opportunity to publish the findings arose did they consent to be quoted. Three answered with an unqualified yes, the remaining seven requested that they see the text prior to publication.

The day after the interviews the researcher wrote to the designers, on college headed paper, to thank them for their time and contributions to the investigation.

The interviews were analysed and contextualised within the parameters of the investigation (see Chapter 4). Prior to publication the contextualised analysis were printed for each of the designers. The quotations attributed to individual designers were underlined to identify their contributions within the context of the analysis. However, each copy was otherwise anonymised by removing the interview schedule, reducing the references for every quotation to the designer's initials and limiting the date information to year alone.

Copies of the anonymised analysis were sent to each designer with a covering letter re-acquainting them with the investigation, the interviews, the researcher's intention to publish and a request for their permission to include their responses. As some time had elapsed the researcher welcomed any further thoughts and reflections on the analysis. To minimise the time required to respond a stamped, addressed envelope was provided. The accompanying letter stated that if they did not reply the researcher would assume they were happy for their comments to be published. If they required any clarification they could contact the researcher by telephone, email or by the stamped, self-addressed envelope included. Of the ten interviewees, three confirmed their approval, seven remained silent, and none objected, challenged or amended the analysis.

I am grateful to the designers for their enthusiasm, time and support.

## APPENDIX 2:
## ANALYSIS OF SECTION 2 OF THE QUESTIONNARE
## VISUAL PREFERENCES.

This appendix provides detailed statistical analysis data for 'Section 2 – Visual Preferences' from the questionnaire, together with a glossary at the end of this appendix for key terms. The appendix is cross-referenced with the text where summaries of the data are contextulised within Chapter 5 of the study. The statistical analysis was completed by Judith Davies, supervised Dr. John Everatt, University of Surrey, via SPSS version 8.0, the data coded for analysis and the significance level pre-set at $p = 0.05$. The statistical analysis undertook two series of analyses on the product preference data, 'the effects of age and sex across all products' followed by 'the effects of age on each product type.'

### The effects of age and sex across all products:

Three mixed design analyses of variance (ANOVA) were performed, treating product year as an interval level dependent variable. Anovas were conducted for each of the 'like', 'dislike' and 'neutral' responses, thereby assessing differences between groups in terms of average product year choice. For each anova there were two grouping variables: 'age' with six levels and 'sex' with two levels. A third factor, 'type of product' was treated as a repeated measure fixed factor. The specific results of interest were the 'effects of age and gender' and these are reported in the following summaries.

- **Analysis of liked items:**

Analysis indicates a significant effect of age ($F = 20$, $df = 5$ and $2419$, $p < .001$) but no evidence of an effect of sex ($F < 1$) nor an interaction between age and sex ($F < 1$). This suggests that the average product year preference vary across age categories (Ap. figure 1).

**Tests of Between-Subjects Effects**

Measure: MEASURE_1
Transformed Variable: Average

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Intercept | 3.36E+10 | 1 | 3.36E+10 | 7.3E+07 | .000 |
| AGE | 47134.425 | 5 | 9426.885 | 20.459 | .000 |
| GENDER | .770 | 1 | .770 | .002 | .967 |
| AGE * GENDER | 2224.532 | 5 | 444.906 | .966 | .438 |
| Error | 1114606.6 | 2419 | 460.772 | | |

Ap. figure 1, Analysis of 'liked' items.

- **Analysis of disliked items:**

Analysis indicates a significant effect of age ($F = 9$, $df = 5$ and $2461$, $p < .001$) but no evidence of an effect of sex ($F < 1$) nor an interaction between age and sex ($F < 1$). The age groups seem to differ in their average disliked product year (Ap. figure 2).

**Tests of Between-Subjects Effects**

Measure: MEASURE_1
Transformed Variable: Average

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Intercept | 3.54E+10 | 1 | 3.54E+10 | 9.8E+07 | .000 |
| AGE | 17503.074 | 5 | 3500.615 | 9.650 | .000 |
| GENDER | .370 | 1 | .370 | .001 | .975 |
| AGE * GENDER | 896.876 | 5 | 179.375 | .494 | .781 |
| Error | 892724.619 | 2461 | 362.749 | | |

Ap. figure 2, Analysis of 'disliked' items.

- **Analysis of neutral items:**

Again a significant effect of age is indicated ($F = 2.38$, $df = 5$ and $2418$, $p < .037$). However, this effect is much smaller than that for the previous two analyses. Consistent with the like and dislike analyses, there was no evidence of an effect of sex ($F < 1$) nor an interaction between age and sex ($F = 1$). This suggests that there is only marginal evidence for age groups differences in neutral product year responses and therefore, these data will not be considered in the following individual product analysis (Ap. figure 3).

**Tests of Between-Subjects Effects**

Measure: MEASURE_1
Transformed Variable: Average

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Intercept | 3.49E+10 | 1 | 3.49E+10 | 9.1E+07 | .000 |
| AGE | 4579.205 | 5 | 915.841 | 2.380 | .037 |
| GENDER | 15.396 | 1 | 15.396 | .040 | .841 |
| AGE * GENDER | 2092.663 | 5 | 418.533 | 1.088 | .365 |
| Error | 930299.929 | 2418 | 384.739 | | |

Ap. figure 3: Analysis of 'neutral' items.

- **The effects of age on each product type:**

'Given the null effects of sex of respondent and the marginal effects of age on neutral responses, the following analyses focused on age and like/dislike responses.

For each of the products, the number of respondents indicating that they liked or disliked a product was determined and analysed to assess its relationship with age. Age and product year, were treated as category variables in these analyses and results are therefore presented as Phi coefficients. Phi indicates the degree of relationship between two category variables (age and year of product) and varies between 0 to indicate 'no relationship' and 1 to signify a 'perfect relationship'. The significance of the Phi coefficient

is presented as a p-value, though given the large number of respondents even small Phi values are likely to be statistically significant. For these purposes, statistical significance indicates whether the relationship is large enough for us to consider there to be some level of correspondence between the two variables. However, what the relationship is can not be determined from this analysis. Therefore, for ease of interpretation, each analysis is presented also in tabular and graphic form. Tables indicate the number of respondents within each age category choosing a particular product, each cell represents a combination of an age category with a product year: e.g., the number of 50-55 year old respondents selecting the 1930s teapot. Tables also convert these frequencies into the percentages of the total number of respondents within a particular age category: e.g., the percentage of 50-55 year old respondents selecting the 1930 teapot. Finally, tables also present the standardised residual for each cell of the analysis. Residuals indicate whether the particular number of respondents in a cell is larger (positive values) or smaller (negative values) than expected: i.e., would we consider the number of 50-55 year old respondents who selected the 1930s teapot to be larger or smaller than expected given the distribution of respondents across the rest of the cells. For the present analyses, the Pearson standard residual values, which have a mean of 0 and a standard deviation of 1, were calculated' (Davies 2000).

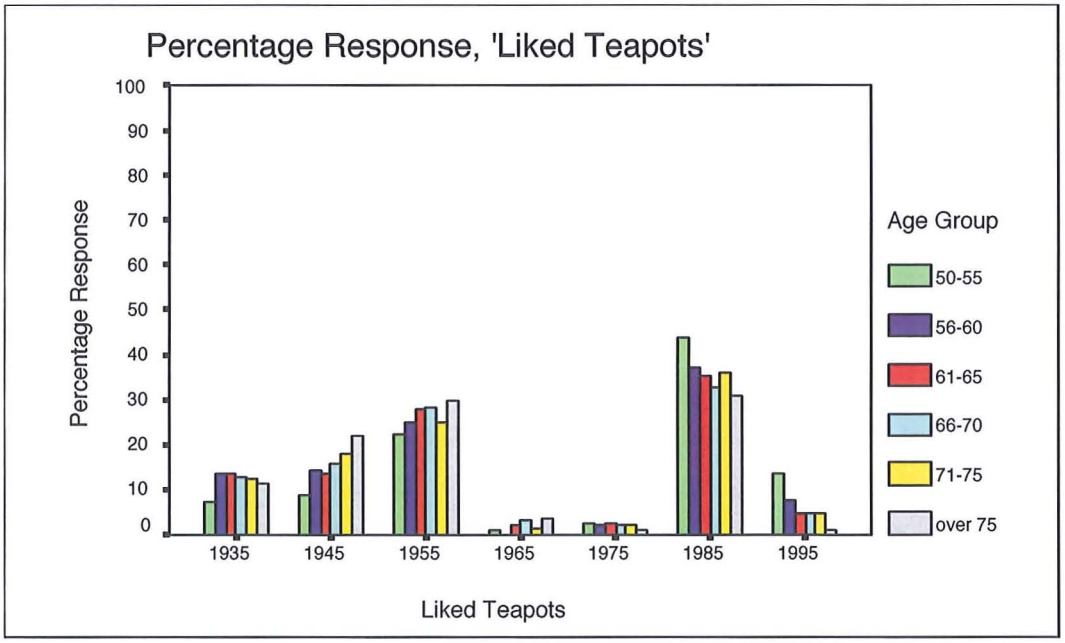
The research translated the findings into bar charts based on percentage responses. By adopting percentage figures the effects of varying distributions of respondents across the age categories was removed from the preference expressed. Individual data for each product, both 'most liked' and 'most disliked' responses follow. In the text, and above, the design decades are referenced by the decade, 1930, 1940, 1950, etc. In the appendix the data is identified by the more numerically specific mid point of the decades, 1935, 1945, 1955, etc. The data is summarised within the text in Chapter 5 and the association identified against age (figures 33 and 35 in text), design decades (figures 34 and 36 in text) and individual products (figure 37 and 38 in text).

## Ap. Figure 4 - Analysis of liked teapot

The analysis indicated a Phi coefficient of 0.14 (p=0.009) for the relationship between age and product year. Although statistically significant, this indicates only a marginal relationship. The data is represented in tabular and graphic form. The data indicates that the 1985 product was liked by the majority of respondents across all ages consistent with the small relationship between age and product year. However, percentages decrease with age for this product whereas they increase with age for the 1955 product such that the over 75 age group show almost equivalent numbers of individuals selecting the 1955 product or the 1985 product. This age-related effect seems the most likely cause of the small, but significant, Phi value.

**age of respondent * liked teapot Crosstabulation**

| | | | liked teapot | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 6 | 7 | 18 | 1 | 2 | 35 | 11 | 80 |
| | | % within age of respondent | 7.5% | 8.8% | 22.5% | 1.3% | 2.5% | 43.8% | 13.8% | 100.0% |
| | | Std. Residual | -1.3 | -1.6 | -.8 | -.6 | .2 | 1.3 | 3.4 | |
| | 56-60 | Count | 30 | 32 | 56 | 0 | 5 | 83 | 17 | 223 |
| | | % within age of respondent | 13.5% | 14.3% | 25.1% | .0% | 2.2% | 37.2% | 7.6% | 100.0% |
| | | Std. Residual | .3 | -.6 | -.5 | -2.2 | .0 | .6 | 1.7 | |
| | 61-65 | Count | 90 | 91 | 187 | 14 | 16 | 235 | 33 | 666 |
| | | % within age of respondent | 13.5% | 13.7% | 28.1% | 2.1% | 2.4% | 35.3% | 5.0% | 100.0% |
| | | Std. Residual | .5 | -1.4 | .6 | -.2 | .3 | .2 | -.2 | |
| | 66-70 | Count | 105 | 129 | 229 | 27 | 19 | 265 | 38 | 812 |
| | | % within age of respondent | 12.9% | 15.9% | 28.2% | 3.3% | 2.3% | 32.6% | 4.7% | 100.0% |
| | | Std. Residual | .1 | .0 | .7 | 2.2 | .2 | -1.1 | -.5 | |
| | 71-75 | Count | 100 | 143 | 198 | 13 | 17 | 285 | 37 | 793 |
| | | % within age of respondent | 12.6% | 18.0% | 25.0% | 1.6% | 2.1% | 35.9% | 4.7% | 100.0% |
| | | Std. Residual | -.2 | 1.5 | -1.0 | -1.1 | -.2 | .5 | -.6 | |
| | over 75 | Count | 12 | 23 | 31 | 4 | 1 | 32 | 1 | 104 |
| | | % within age of respondent | 11.5% | 22.1% | 29.8% | 3.8% | 1.0% | 30.8% | 1.0% | 100.0% |
| | | Std. Residual | -.4 | 1.6 | .6 | 1.1 | -.9 | -.7 | -1.9 | |
| Total | | Count | 343 | 425 | 719 | 59 | 60 | 935 | 137 | 2678 |
| | | % within age of respondent | 12.8% | 15.9% | 26.8% | 2.2% | 2.2% | 34.9% | 5.1% | 100.0% |

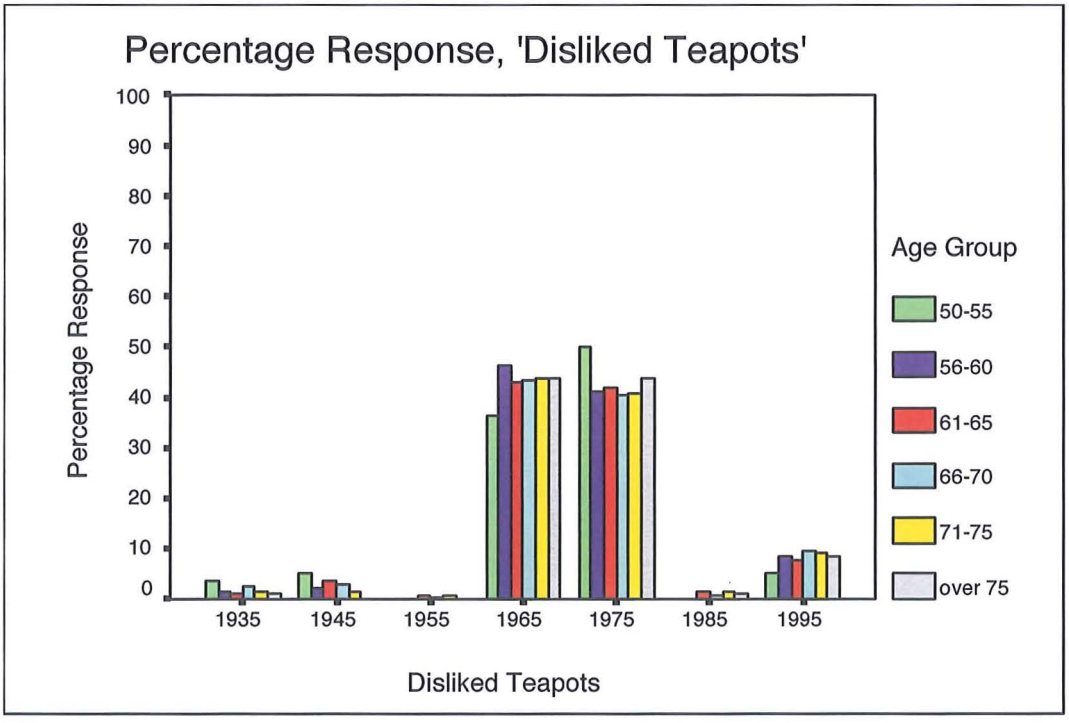


## Ap. Figure 5 - Analysis of disliked teapot

The analysis produced a non-significant Phi coefficient of 0.11 (p=0.24) indicating scant evidence for a relationship between age and product year. Ap. figure 5 presents the results of this analysis in tabular and graphical forms.

**age of respondent * disliked teapot Crosstabulation**

| | | | disliked teapot | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 3 | 4 | 0 | 29 | 40 | 0 | 4 | 80 |
| | | % within age of respondent | 3.8% | 5.0% | .0% | 36.3% | 50.0% | .0% | 5.0% | 100.0% |
| | | Std. Residual | 1.3 | 1.3 | -.6 | -1.0 | 1.2 | -.9 | -1.1 | |
| | 56-60 | Count | 3 | 5 | 0 | 104 | 92 | 0 | 19 | 223 |
| | | % within age of respondent | 1.3% | 2.2% | .0% | 46.6% | 41.3% | .0% | 8.5% | 100.0% |
| | | Std. Residual | -.5 | -.3 | -1.0 | .6 | -.1 | -1.5 | -.1 | |
| | 61-65 | Count | 8 | 24 | 4 | 287 | 281 | 10 | 52 | 666 |
| | | % within age of respondent | 1.2% | 3.6% | .6% | 43.1% | 42.2% | 1.5% | 7.8% | 100.0% |
| | | Std. Residual | -1.1 | 1.6 | .8 | -.3 | .2 | 1.2 | -.8 | |
| | 66-70 | Count | 21 | 24 | 2 | 356 | 330 | 5 | 77 | 815 |
| | | % within age of respondent | 2.6% | 2.9% | .2% | 43.7% | 40.5% | .6% | 9.4% | 100.0% |
| | | Std. Residual | 1.8 | .6 | -.7 | -.1 | -.5 | -1.2 | .7 | |
| | 71-75 | Count | 11 | 13 | 5 | 352 | 327 | 12 | 73 | 793 |
| | | % within age of respondent | 1.4% | 1.6% | .6% | 44.4% | 41.2% | 1.5% | 9.2% | 100.0% |
| | | Std. Residual | -.8 | -1.7 | 1.0 | .2 | -.2 | 1.3 | .5 | |
| | over 75 | Count | 1 | 0 | 0 | 46 | 46 | 1 | 9 | 103 |
| | | % within age of respondent | 1.0% | .0% | .0% | 44.7% | 44.7% | 1.0% | 8.7% | 100.0% |
| | | Std. Residual | -.6 | -1.6 | -.7 | .1 | .5 | -.1 | .0 | |
| Total | | Count | 47 | 70 | 11 | 1174 | 1116 | 28 | 234 | 2680 |
| | | % within age of respondent | 1.8% | 2.6% | .4% | 43.8% | 41.6% | 1.0% | 8.7% | 100.0% |

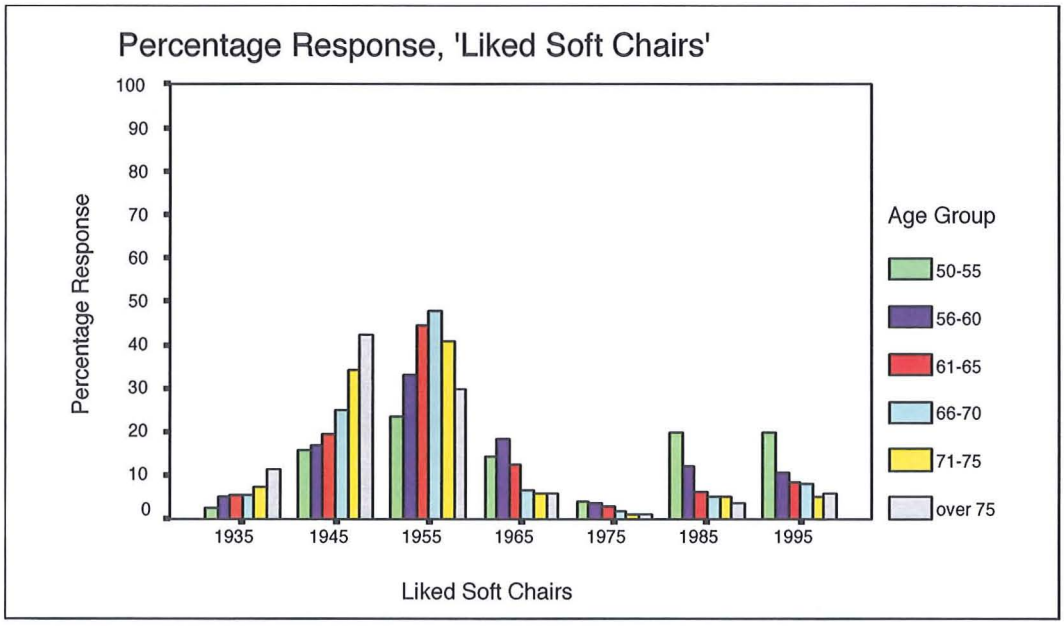


## Ap. Figure 6 - Analysis of liked soft chair

The Phi correlation was 0.28 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. These data suggest that most respondents preferred the 1955 product. However, the standard residuals also suggest that this preference is less pronounced amongst younger respondents (50-55 and 56-60 categories) and indicate a trend, particularly amongst the 50-55 respondents, for newer products to be liked as much as the 1955 item. This trend is reversed amongst the oldest groups (those older than 70), with an increase in preference for even older products, particularly the 1945 item.

**age of respondent * liked soft chair Crosstabulation**

| | | | liked soft chair | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 2 | 12 | 18 | 11 | 3 | 15 | 15 | 76 |
| | | % within age of respondent | 2.6% | 15.8% | 23.7% | 14.5% | 3.9% | 19.7% | 19.7% | 100.0% |
| | | Std. Residual | -1.3 | -1.8 | -2.5 | 1.6 | 1.1 | 4.6 | 3.8 | |
| | 56-60 | Count | 11 | 36 | 71 | 39 | 8 | 26 | 23 | 214 |
| | | % within age of respondent | 5.1% | 16.8% | 33.2% | 18.2% | 3.7% | 12.1% | 10.7% | 100.0% |
| | | Std. Residual | -.6 | -2.7 | -2.0 | 4.5 | 1.6 | 3.3 | 1.6 | |
| | 61-65 | Count | 36 | 129 | 292 | 83 | 20 | 41 | 55 | 656 |
| | | % within age of respondent | 5.5% | 19.7% | 44.5% | 12.7% | 3.0% | 6.3% | 8.4% | 100.0% |
| | | Std. Residual | -.8 | -3.3 | .9 | 3.1 | 1.6 | -.1 | .6 | |
| | 66-70 | Count | 45 | 198 | 379 | 51 | 14 | 41 | 63 | 791 |
| | | % within age of respondent | 5.7% | 25.0% | 47.9% | 6.4% | 1.8% | 5.2% | 8.0% | 100.0% |
| | | Std. Residual | -.6 | -.6 | 2.4 | -2.4 | -.7 | -1.3 | .2 | |
| | 71-75 | Count | 58 | 271 | 322 | 48 | 10 | 41 | 42 | 792 |
| | | % within age of respondent | 7.3% | 34.2% | 40.7% | 6.1% | 1.3% | 5.2% | 5.3% | 100.0% |
| | | Std. Residual | 1.2 | 4.4 | -.7 | -2.8 | -1.7 | -1.3 | -2.5 | |
| | over 75 | Count | 12 | 44 | 31 | 6 | 1 | 4 | 6 | 104 |
| | | % within age of respondent | 11.5% | 42.3% | 29.8% | 5.8% | 1.0% | 3.8% | 5.8% | 100.0% |
| | | Std. Residual | 2.2 | 3.2 | -2.0 | -1.1 | -.8 | -1.0 | -.7 | |
| Total | | Count | 164 | 690 | 1113 | 238 | 56 | 168 | 204 | 2633 |
| | | % within age of respondent | 6.2% | 26.2% | 42.3% | 9.0% | 2.1% | 6.4% | 7.7% | 100.0% |

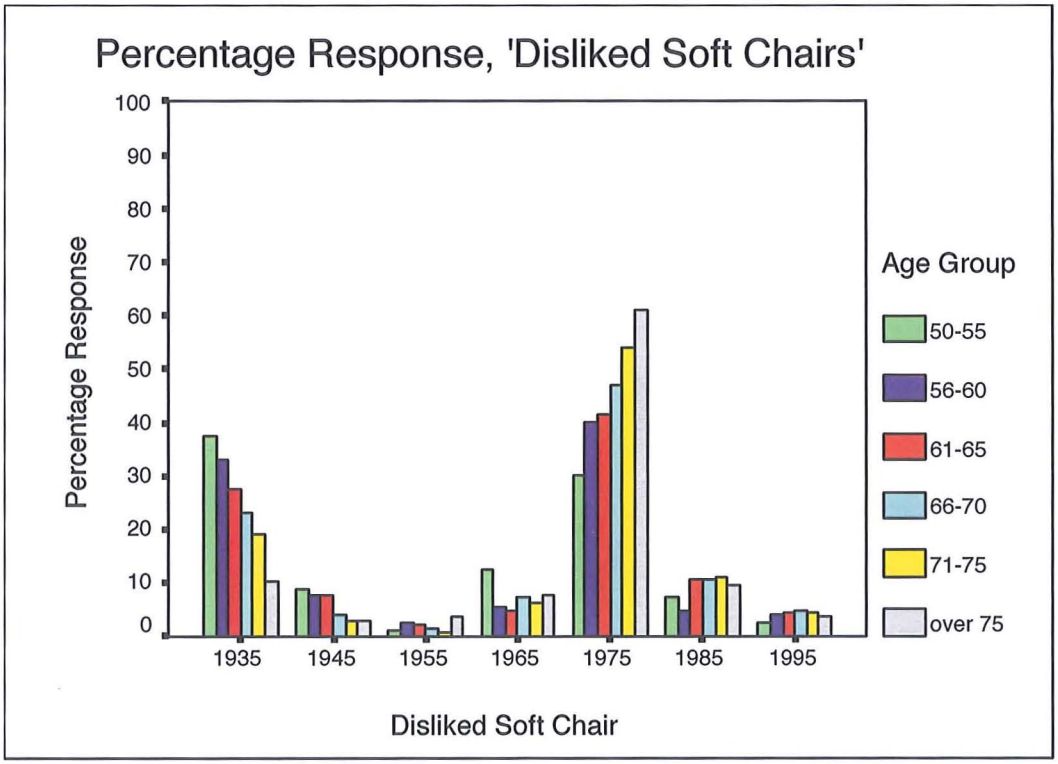


## Ap. Figure 7 - Analysis of disliked soft chair

Phi was 0.20 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. As with the like responses, most groups tended to dislike one of the products: the 1975 product in this case. However, again this was dependent on the age of the respondent. The oldest respondents were most likely to dislike the 1975 products whereas the youngest respondents were more likely to dislike the 1935 product.

**age of respondent * disliked soft chair Crosstabulation**

| | | | disliked soft chair | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 30 | 7 | 1 | 10 | 24 | 6 | 2 | 80 |
| | | % within age of respondent | 37.5% | 8.8% | 1.3% | 12.5% | 30.0% | 7.5% | 2.5% | 100.0% |
| | | Std. Residual | 2.4 | 1.4 | -.3 | 2.1 | -2.3 | -.8 | -.8 | |
| | 56-60 | Count | 74 | 17 | 6 | 12 | 90 | 11 | 9 | 219 |
| | | % within age of respondent | 33.8% | 7.8% | 2.7% | 5.5% | 41.1% | 5.0% | 4.1% | 100.0% |
| | | Std. Residual | 2.9 | 1.7 | 1.1 | -.6 | -1.4 | -2.4 | -.2 | |
| | 61-65 | Count | 184 | 51 | 15 | 33 | 277 | 71 | 29 | 660 |
| | | % within age of respondent | 27.9% | 7.7% | 2.3% | 5.0% | 42.0% | 10.8% | 4.4% | 100.0% |
| | | Std. Residual | 2.0 | 3.0 | 1.1 | -1.5 | -2.2 | .3 | .0 | |
| | 66-70 | Count | 189 | 34 | 13 | 60 | 384 | 87 | 39 | 806 |
| | | % within age of respondent | 23.4% | 4.2% | 1.6% | 7.4% | 47.6% | 10.8% | 4.8% | 100.0% |
| | | Std. Residual | -.4 | -1.1 | -.2 | 1.0 | -.1 | .4 | .6 | |
| | 71-75 | Count | 154 | 24 | 7 | 51 | 435 | 90 | 34 | 795 |
| | | % within age of respondent | 19.4% | 3.0% | .9% | 6.4% | 54.7% | 11.3% | 4.3% | 100.0% |
| | | Std. Residual | -2.7 | -2.6 | -1.8 | -.1 | 2.8 | .9 | -.2 | |
| | over 75 | Count | 11 | 3 | 4 | 8 | 64 | 10 | 4 | 104 |
| | | % within age of respondent | 10.6% | 2.9% | 3.8% | 7.7% | 61.5% | 9.6% | 3.8% | 100.0% |
| | | Std. Residual | -2.8 | -1.0 | 1.6 | .5 | 2.0 | -.2 | -.3 | |
| Total | | Count | 642 | 136 | 46 | 174 | 1274 | 275 | 117 | 2664 |
| | | % within age of respondent | 24.1% | 5.1% | 1.7% | 6.5% | 47.8% | 10.3% | 4.4% | 100.0% |

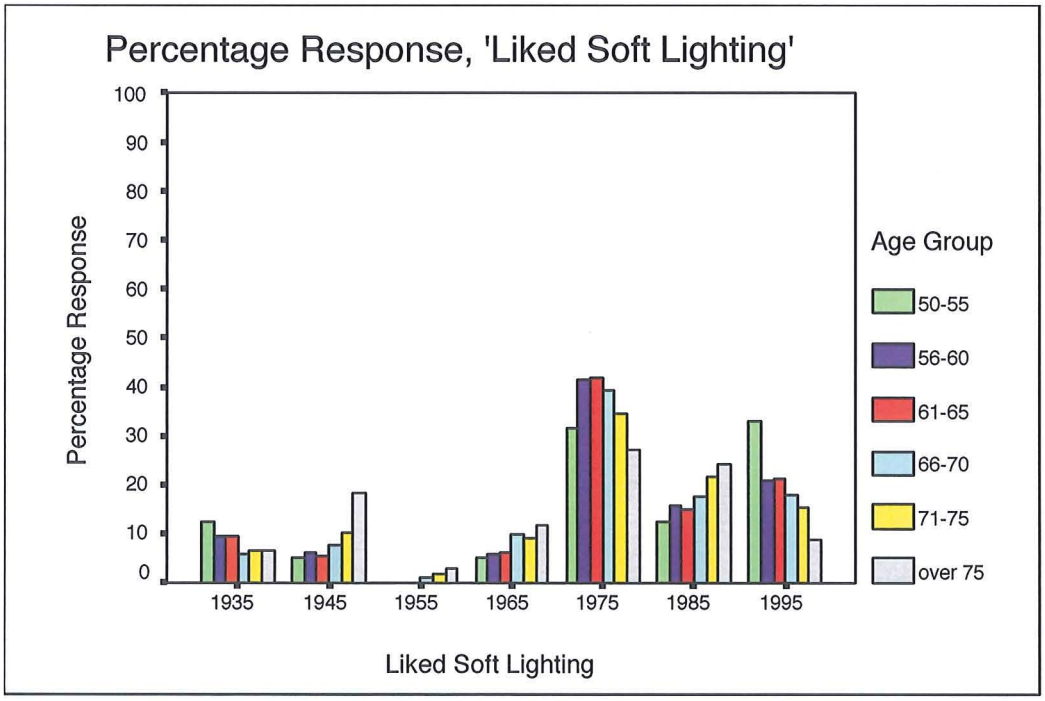


## Ap. Figure 8 - Analysis of liked soft lighting

Phi was 0.20 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. As with the previous analysis, most groups tended to like one of the products: in this case, the 1975 product was liked by most of the respondents. However, the residuals again suggest that larger numbers of older respondents liked older products (i.e., 1945) whereas the youngest respondents were more likely to like newer products (i.e., 1995).

**age of respondent * liked soft lighting Crosstabulation**

| | | | liked soft lighting | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 10 | 4 | 0 | 4 | 25 | 10 | 26 | 79 |
| | | % within age of respondent | 12.7% | 5.1% | .0% | 5.1% | 31.6% | 12.7% | 32.9% | 100.0% |
| | | Std. Residual | 1.6 | -1.0 | -.9 | -1.0 | -.9 | -1.2 | 3.0 | |
| | 56-60 | Count | 21 | 14 | 0 | 13 | 91 | 35 | 46 | 220 |
| | | % within age of respondent | 9.5% | 6.4% | .0% | 5.9% | 41.4% | 15.9% | 20.9% | 100.0% |
| | | Std. Residual | 1.1 | -1.0 | -1.5 | -1.3 | .8 | -.8 | .8 | |
| | 61-65 | Count | 62 | 37 | 1 | 41 | 274 | 100 | 141 | 656 |
| | | % within age of respondent | 9.5% | 5.6% | .2% | 6.3% | 41.8% | 15.2% | 21.5% | 100.0% |
| | | Std. Residual | 1.8 | -2.4 | -2.3 | -1.9 | 1.6 | -1.8 | 1.8 | |
| | 66-70 | Count | 48 | 63 | 9 | 80 | 313 | 141 | 144 | 798 |
| | | % within age of respondent | 6.0% | 7.9% | 1.1% | 10.0% | 39.2% | 17.7% | 18.0% | 100.0% |
| | | Std. Residual | -1.6 | -.4 | .2 | 1.6 | .6 | -.4 | -.3 | |
| | 71-75 | Count | 51 | 81 | 15 | 70 | 269 | 169 | 121 | 776 |
| | | % within age of respondent | 6.6% | 10.4% | 1.9% | 9.0% | 34.7% | 21.8% | 15.6% | 100.0% |
| | | Std. Residual | -1.0 | 2.1 | 2.3 | .6 | -1.5 | 2.3 | -1.9 | |
| | over 75 | Count | 7 | 19 | 3 | 12 | 28 | 25 | 9 | 103 |
| | | % within age of respondent | 6.8% | 18.4% | 2.9% | 11.7% | 27.2% | 24.3% | 8.7% | 100.0% |
| | | Std. Residual | -.3 | 3.6 | 1.8 | 1.2 | -1.8 | 1.4 | -2.3 | |
| Total | | Count | 199 | 218 | 28 | 220 | 1000 | 480 | 487 | 2632 |
| | | % within age of respondent | 7.6% | 8.3% | 1.1% | 8.4% | 38.0% | 18.2% | 18.5% | 100.0% |

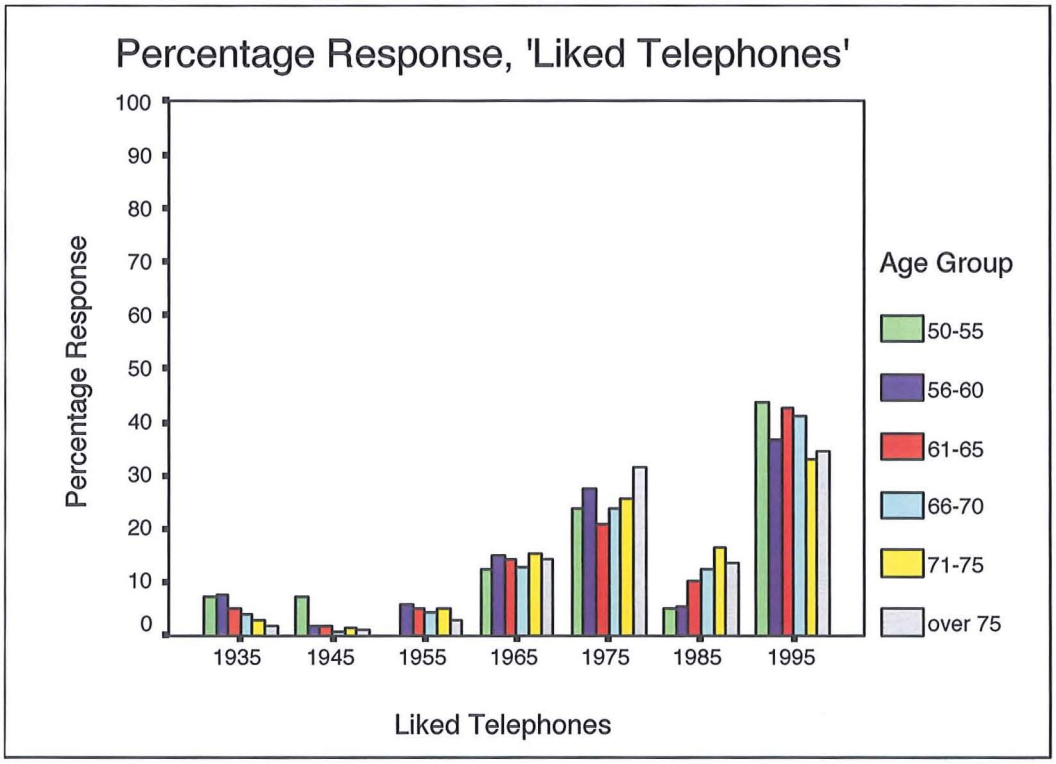


## Ap. Figure 10 - Analysis of liked telephones

Phi was 0.18 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The newest (1995) product was liked by most individuals, though there is a trend for older respondents to also like the 1975 product.

**age of respondent * liked telephone Crosstabulation**

| | | | liked telephone | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | |
| age of respondent | 50-55 | Count | 6 | 6 | 0 | 10 | 19 | 4 | 35 | 80 |
| | | % within age of respondent | 7.5% | 7.5% | .0% | 12.5% | 23.8% | 5.0% | 43.8% | 100.0% |
| | | Std. Residual | 1.4 | 4.3 | -2.0 | -.4 | -.1 | -1.9 | .8 | |
| | 56-60 | Count | 17 | 4 | 13 | 33 | 61 | 12 | 81 | 221 |
| | | % within age of respondent | 7.7% | 1.8% | 5.9% | 14.9% | 27.6% | 5.4% | 36.7% | 100.0% |
| | | Std. Residual | 2.5 | .3 | .8 | .3 | 1.0 | -2.9 | -.4 | |
| | 61-65 | Count | 33 | 11 | 35 | 95 | 138 | 68 | 283 | 663 |
| | | % within age of respondent | 5.0% | 1.7% | 5.3% | 14.3% | 20.8% | 10.3% | 42.7% | 100.0% |
| | | Std. Residual | .9 | .3 | .6 | .1 | -1.8 | -1.6 | 1.7 | |
| | 66-70 | Count | 33 | 7 | 37 | 106 | 196 | 103 | 335 | 817 |
| | | % within age of respondent | 4.0% | .9% | 4.5% | 13.0% | 24.0% | 12.6% | 41.0% | 100.0% |
| | | Std. Residual | -.3 | -1.6 | -.3 | -.9 | -.2 | .2 | 1.1 | |
| | 71-75 | Count | 23 | 12 | 40 | 122 | 205 | 131 | 263 | 796 |
| | | % within age of respondent | 2.9% | 1.5% | 5.0% | 15.3% | 25.8% | 16.5% | 33.0% | 100.0% |
| | | Std. Residual | -1.9 | .0 | .3 | .8 | .8 | 3.3 | -2.5 | |
| | over 75 | Count | 2 | 1 | 3 | 15 | 33 | 14 | 36 | 104 |
| | | % within age of respondent | 1.9% | 1.0% | 2.9% | 14.4% | 31.7% | 13.5% | 34.6% | 100.0% |
| | | Std. Residual | -1.2 | -.5 | -.9 | .1 | 1.5 | .3 | -.6 | |
| Total | | Count | 114 | 41 | 128 | 381 | 652 | 332 | 1033 | 2681 |
| | | % within age of respondent | 4.3% | 1.5% | 4.8% | 14.2% | 24.3% | 12.4% | 38.5% | 100.0% |

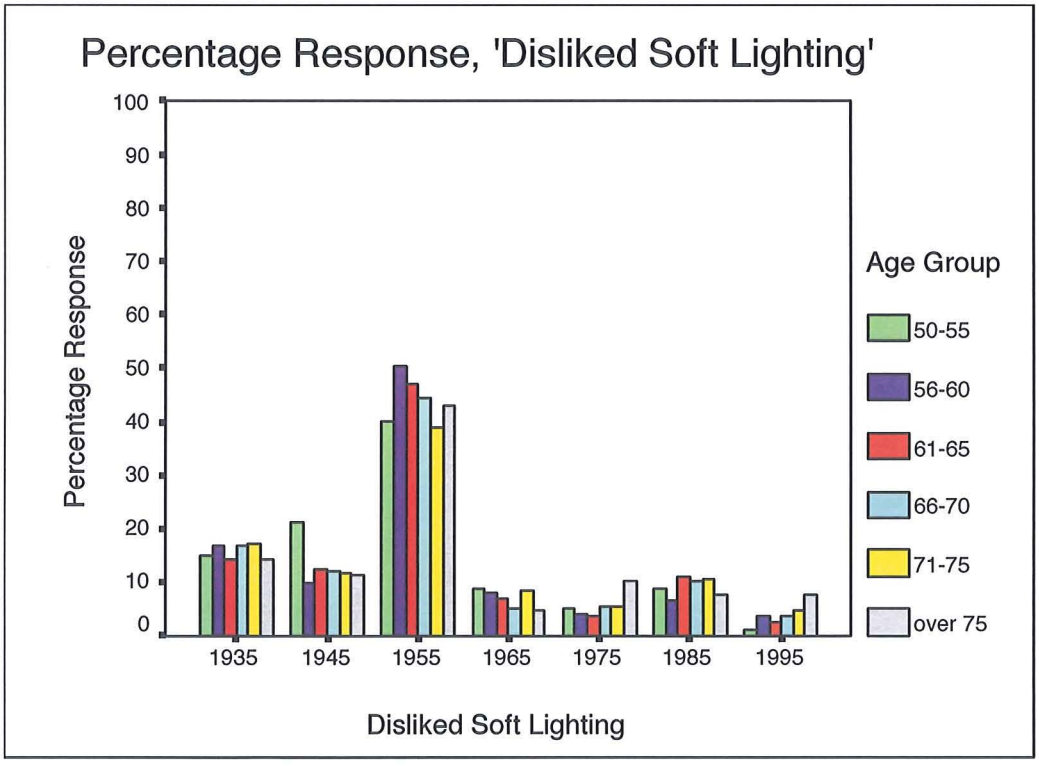


## Ap. Figure 9 - Analysis of disliked soft lighting

The analysis indicated a Phi coefficient of 0.14 ($p<0.015$) for the relationship between age and product year. Although statistically significant, this indicates only a marginal relationship. Both indicate that the 1955 product was disliked by the majority of respondents across all ages.

**age of respondent * disliked soft lighting Crosstabulation**

| | | | disliked soft lighting | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 12 | 17 | 32 | 7 | 4 | 7 | 1 | 80 |
| | | % within age of respondent | 15.0% | 21.3% | 40.0% | 8.8% | 5.0% | 8.8% | 1.3% | 100.0% |
| | | Std. Residual | -.3 | 2.3 | -.6 | .6 | -.1 | -.4 | -1.2 | |
| | 56-60 | Count | 38 | 22 | 113 | 18 | 9 | 15 | 8 | 223 |
| | | % within age of respondent | 17.0% | 9.9% | 50.7% | 8.1% | 4.0% | 6.7% | 3.6% | 100.0% |
| | | Std. Residual | .2 | -1.1 | 1.4 | .6 | -.8 | -1.7 | -.3 | |
| | 61-65 | Count | 95 | 84 | 315 | 47 | 25 | 74 | 17 | 657 |
| | | % within age of respondent | 14.5% | 12.8% | 47.9% | 7.2% | 3.8% | 11.3% | 2.6% | 100.0% |
| | | Std. Residual | -1.3 | .3 | 1.3 | .1 | -1.6 | .7 | -1.7 | |
| | 66-70 | Count | 140 | 99 | 363 | 43 | 45 | 83 | 31 | 804 |
| | | % within age of respondent | 17.4% | 12.3% | 45.1% | 5.3% | 5.6% | 10.3% | 3.9% | 100.0% |
| | | Std. Residual | .6 | .0 | .2 | -1.8 | .5 | .0 | -.1 | |
| | 71-75 | Count | 138 | 93 | 312 | 67 | 44 | 87 | 39 | 780 |
| | | % within age of respondent | 17.7% | 11.9% | 40.0% | 8.6% | 5.6% | 11.2% | 5.0% | 100.0% |
| | | Std. Residual | .8 | -.3 | -1.9 | 1.6 | .5 | .7 | 1.5 | |
| | over 75 | Count | 15 | 12 | 45 | 5 | 11 | 8 | 8 | 104 |
| | | % within age of respondent | 14.4% | 11.5% | 43.3% | 4.8% | 10.6% | 7.7% | 7.7% | 100.0% |
| | | Std. Residual | -.5 | -.2 | -.2 | -.9 | 2.4 | -.8 | 1.9 | |
| Total | | Count | 438 | 327 | 1180 | 187 | 138 | 274 | 104 | 2648 |
| | | % within age of respondent | 16.5% | 12.3% | 44.6% | 7.1% | 5.2% | 10.3% | 3.9% | 100.0% |

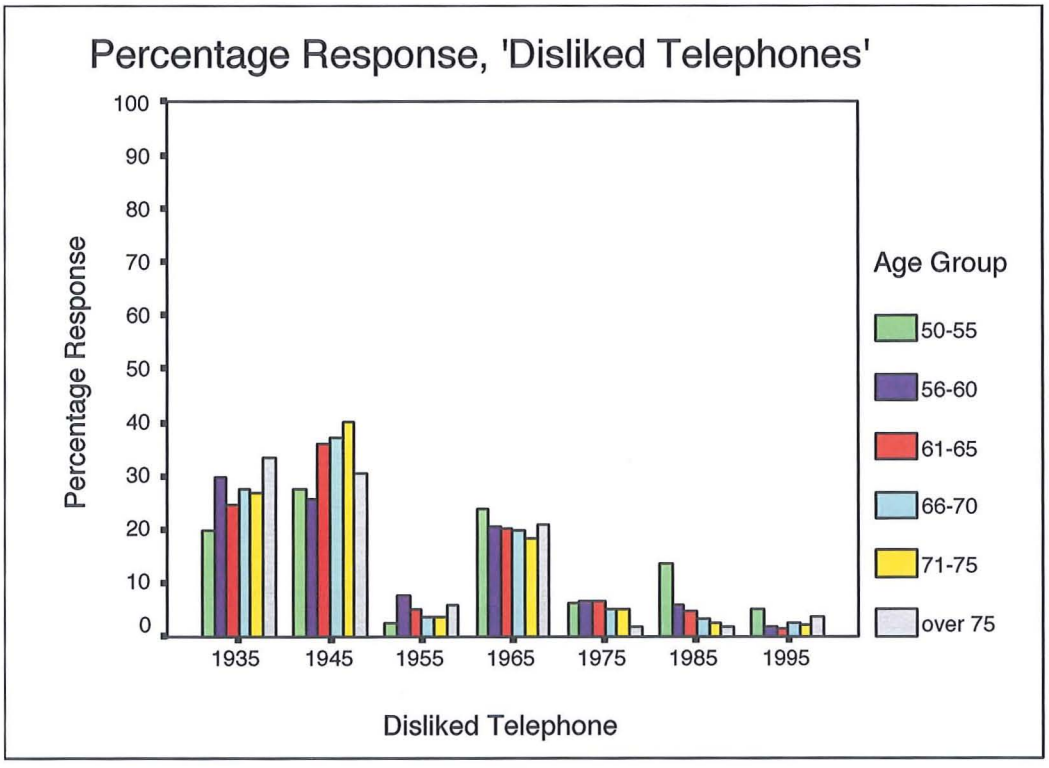


## Ap. Figure 11 - Analysis of disliked telephones

Phi was 0.16 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data suggests that all age groups seem to dislike the older products, particularly the older groups. The small relationship here seems inconsistent with the previous finding that older respondents prefer older products.

**age of respondent * disliked telephone Crosstabulation**

| | | | disliked telephone | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 16 | 22 | 2 | 19 | 5 | 11 | 4 | 79 |
| | | % within age of respondent | 20.3% | 27.8% | 2.5% | 24.1% | 6.3% | 13.9% | 5.1% | 100.0% |
| | | Std. Residual | -1.2 | -1.3 | -.8 | .8 | .3 | 4.3 | 1.7 | |
| | 56-60 | Count | 67 | 58 | 17 | 46 | 15 | 13 | 4 | 220 |
| | | % within age of respondent | 30.5% | 26.4% | 7.7% | 20.9% | 6.8% | 5.9% | 1.8% | 100.0% |
| | | Std. Residual | .9 | -2.5 | 2.4 | .3 | .8 | 1.3 | -.4 | |
| | 61-65 | Count | 164 | 240 | 34 | 135 | 45 | 33 | 10 | 661 |
| | | % within age of respondent | 24.8% | 36.3% | 5.1% | 20.4% | 6.8% | 5.0% | 1.5% | 100.0% |
| | | Std. Residual | -1.2 | -.1 | .9 | .3 | 1.3 | 1.2 | -1.2 | |
| | 66-70 | Count | 227 | 303 | 29 | 163 | 41 | 28 | 20 | 811 |
| | | % within age of respondent | 28.0% | 37.4% | 3.6% | 20.1% | 5.1% | 3.5% | 2.5% | 100.0% |
| | | Std. Residual | .5 | .4 | -1.1 | .1 | -.6 | -.9 | .5 | |
| | 71-75 | Count | 215 | 321 | 29 | 148 | 41 | 22 | 17 | 793 |
| | | % within age of respondent | 27.1% | 40.5% | 3.7% | 18.7% | 5.2% | 2.8% | 2.1% | 100.0% |
| | | Std. Residual | .0 | 1.8 | -1.0 | -.8 | -.5 | -1.8 | -.1 | |
| | over 75 | Count | 35 | 32 | 6 | 22 | 2 | 2 | 4 | 103 |
| | | % within age of respondent | 34.0% | 31.1% | 5.8% | 21.4% | 1.9% | 1.9% | 3.9% | 100.0% |
| | | Std. Residual | 1.3 | -.9 | .7 | .3 | -1.6 | -1.1 | 1.1 | |
| Total | | Count | 724 | 976 | 117 | 533 | 149 | 109 | 59 | 2667 |
| | | % within age of respondent | 27.1% | 36.6% | 4.4% | 20.0% | 5.6% | 4.1% | 2.2% | 100.0% |

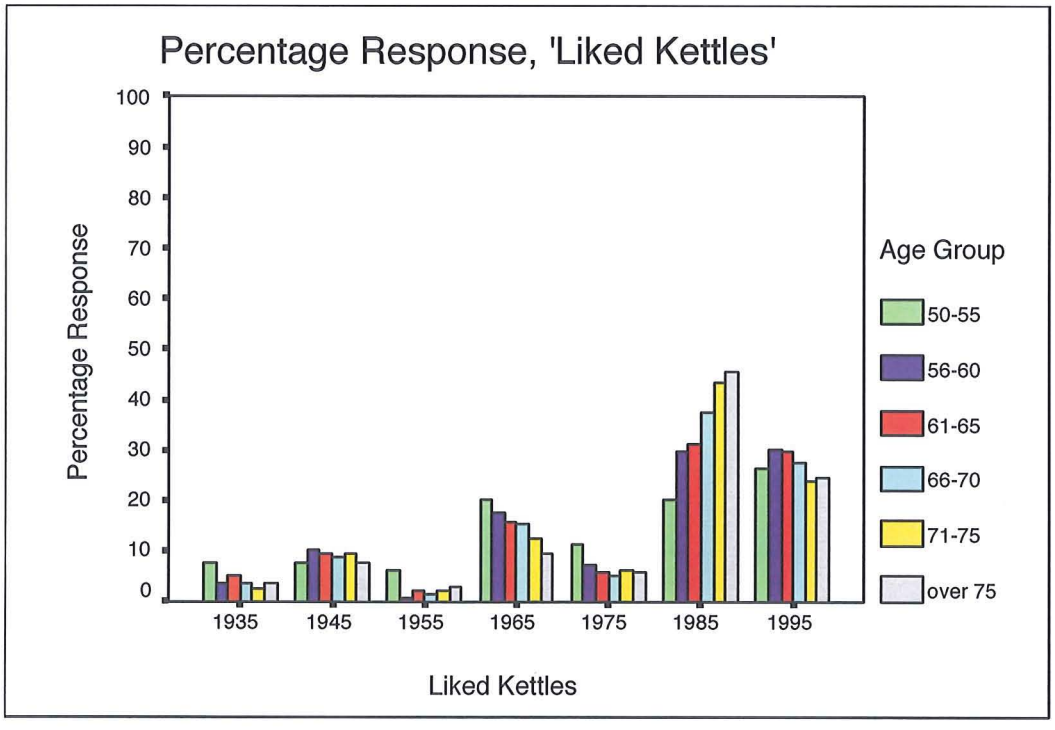


## Ap. Figure 12 - Analysis of liked kettles

Phi was 0.16 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. Again the data suggest a tendency for all groups to prefer the newer products. What relationship there is between age and product year seems confined to younger respondents being less consistent in their preferences.

**age of respondent * liked kettle Crosstabulation**

| | | | liked kettle | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 6 | 6 | 5 | 16 | 9 | 16 | 21 | 79 |
| | | % within age of respondent | 7.6% | 7.6% | 6.3% | 20.3% | 11.4% | 20.3% | 26.6% | 100.0% |
| | | Std. Residual | 1.7 | -.5 | 2.7 | 1.3 | 1.9 | -2.4 | -.1 | |
| | 56-60 | Count | 8 | 23 | 2 | 39 | 16 | 66 | 67 | 221 |
| | | % within age of respondent | 3.6% | 10.4% | .9% | 17.6% | 7.2% | 29.9% | 30.3% | 100.0% |
| | | Std. Residual | -.2 | .5 | -1.2 | 1.1 | .7 | -1.7 | .9 | |
| | 61-65 | Count | 35 | 64 | 14 | 106 | 40 | 209 | 197 | 665 |
| | | % within age of respondent | 5.3% | 9.6% | 2.1% | 15.9% | 6.0% | 31.4% | 29.6% | 100.0% |
| | | Std. Residual | 1.8 | .3 | .2 | .7 | .0 | -2.3 | 1.3 | |
| | 66-70 | Count | 31 | 72 | 13 | 127 | 42 | 305 | 224 | 814 |
| | | % within age of respondent | 3.8% | 8.8% | 1.6% | 15.6% | 5.2% | 37.5% | 27.5% | 100.0% |
| | | Std. Residual | -.1 | -.4 | -.8 | .6 | -1.0 | .3 | .3 | |
| | 71-75 | Count | 20 | 76 | 17 | 99 | 49 | 344 | 189 | 794 |
| | | % within age of respondent | 2.5% | 9.6% | 2.1% | 12.5% | 6.2% | 43.3% | 23.8% | 100.0% |
| | | Std. Residual | -2.0 | .3 | .2 | -1.7 | .1 | 3.0 | -1.8 | |
| | over 75 | Count | 4 | 8 | 3 | 10 | 6 | 48 | 26 | 105 |
| | | % within age of respondent | 3.8% | 7.6% | 2.9% | 9.5% | 5.7% | 45.7% | 24.8% | 100.0% |
| | | Std. Residual | .0 | -.6 | .6 | -1.4 | -.1 | 1.5 | -.4 | |
| Total | | Count | 104 | 249 | 54 | 397 | 162 | 988 | 724 | 2678 |
| | | % within age of respondent | 3.9% | 9.3% | 2.0% | 14.8% | 6.0% | 36.9% | 27.0% | 100.0% |

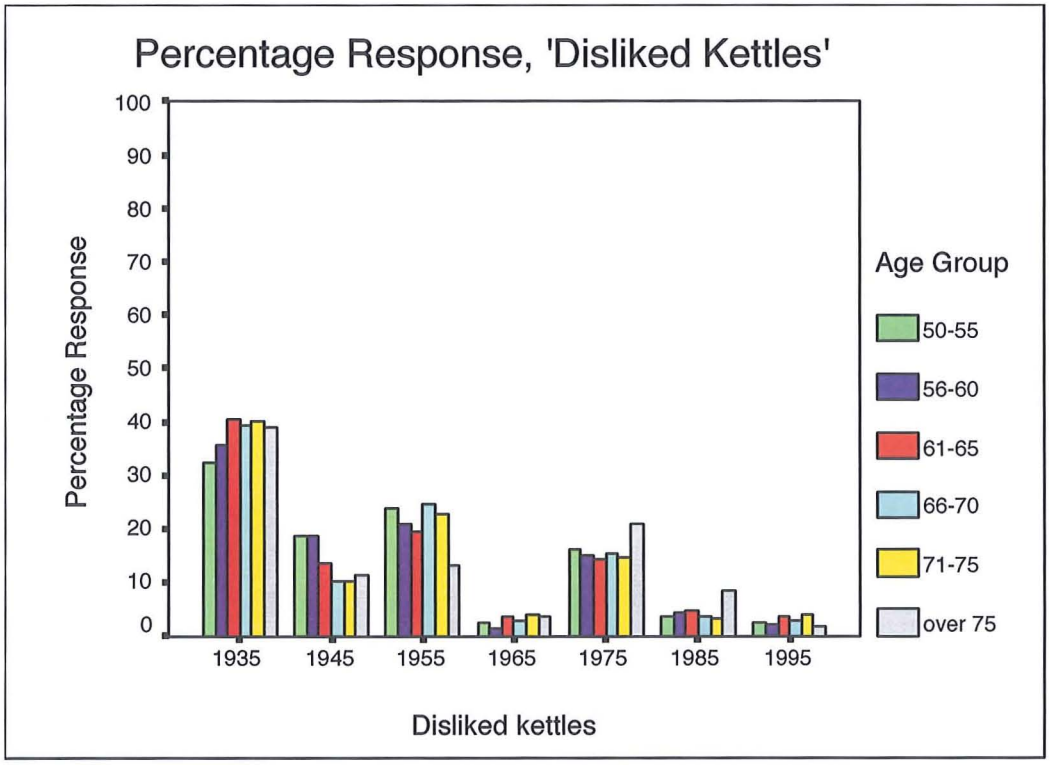


## Ap. Figure 13 - Analysis of disliked kettles

Phi was 0.13 ($p<0.039$) for the relationship between age and product year. Although statistically significant, this indicates only a marginal relationship. The data indicates that most respondents dislike the oldest product (1935), though there is also a tendency for younger respondents to dislike the 1955 product too.

**age of respondent * disliked kettle Crosstabulation**

| | | | disliked kettle | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 26 | 15 | 19 | 2 | 13 | 3 | 2 | 80 |
| | | % within age of respondent | 32.5% | 18.8% | 23.8% | 2.5% | 16.3% | 3.8% | 2.5% | 100.0% |
| | | Std. Residual | -1.0 | 1.7 | .3 | -.4 | .2 | -.2 | -.4 | |
| | 56-60 | Count | 80 | 42 | 47 | 3 | 34 | 10 | 5 | 221 |
| | | % within age of respondent | 36.2% | 19.0% | 21.3% | 1.4% | 15.4% | 4.5% | 2.3% | 100.0% |
| | | Std. Residual | -.8 | 2.9 | -.3 | -1.6 | .0 | .3 | -.9 | |
| | 61-65 | Count | 270 | 90 | 129 | 25 | 96 | 31 | 25 | 666 |
| | | % within age of respondent | 40.5% | 13.5% | 19.4% | 3.8% | 14.4% | 4.7% | 3.8% | 100.0% |
| | | Std. Residual | .4 | 1.0 | -1.5 | .6 | -.6 | .7 | .6 | |
| | 66-70 | Count | 323 | 84 | 201 | 25 | 127 | 31 | 24 | 815 |
| | | % within age of respondent | 39.6% | 10.3% | 24.7% | 3.1% | 15.6% | 3.8% | 2.9% | 100.0% |
| | | Std. Residual | .0 | -1.5 | 1.5 | -.4 | .2 | -.4 | -.6 | |
| | 71-75 | Count | 321 | 83 | 184 | 31 | 119 | 26 | 32 | 796 |
| | | % within age of respondent | 40.3% | 10.4% | 23.1% | 3.9% | 14.9% | 3.3% | 4.0% | 100.0% |
| | | Std. Residual | .3 | -1.4 | .6 | .8 | -.3 | -1.2 | 1.0 | |
| | over 75 | Count | 41 | 12 | 14 | 4 | 22 | 9 | 2 | 104 |
| | | % within age of respondent | 39.4% | 11.5% | 13.5% | 3.8% | 21.2% | 8.7% | 1.9% | 100.0% |
| | | Std. Residual | .0 | -.2 | -1.9 | .3 | 1.5 | 2.3 | -.8 | |
| Total | | Count | 1061 | 326 | 594 | 90 | 411 | 110 | 90 | 2682 |
| | | % within age of respondent | 39.6% | 12.2% | 22.1% | 3.4% | 15.3% | 4.1% | 3.4% | 100.0% |

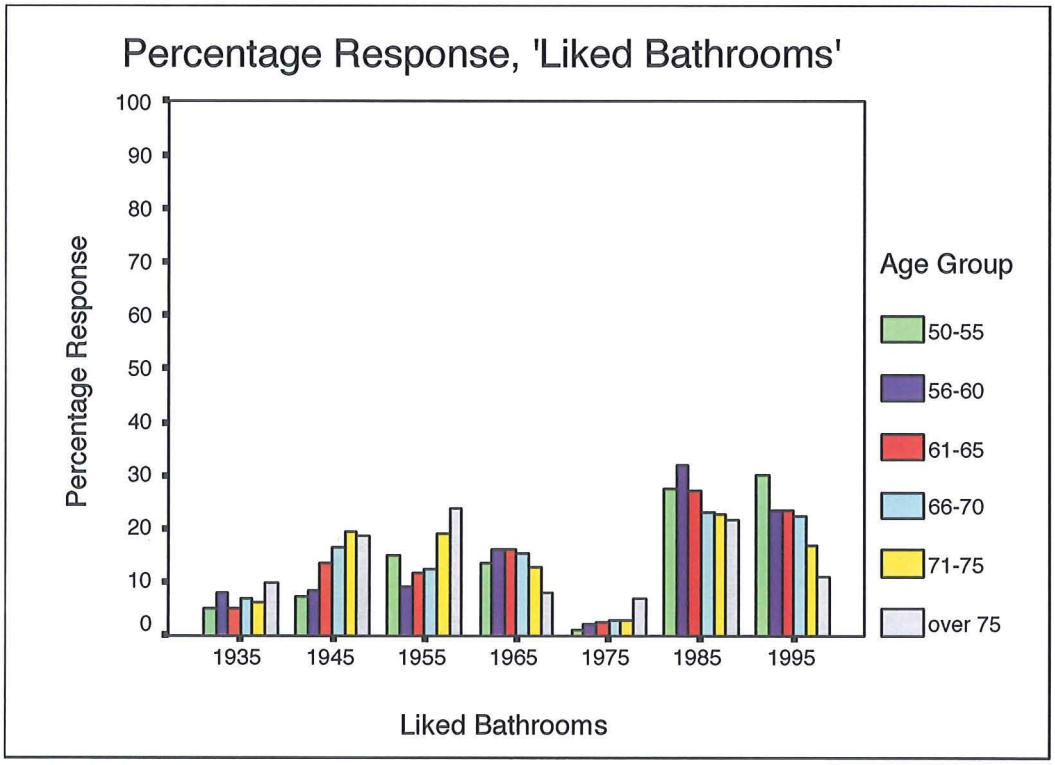


## Ap. Figure 14 - Analysis of liked bathrooms

Phi was 0.19 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data suggests a tendency for younger respondents to choose newer products (1985 and 1995) and older respondents to choose older products (1945 and 1955), though all age groups like the 1985 product to some extent.

**age of respondent * liked bathroom Crosstabulation**

| | | | liked bathroom | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 4 | 6 | 12 | 11 | 1 | 22 | 24 | 80 |
| | | % within age of respondent | 5.0% | 7.5% | 15.0% | 13.8% | 1.3% | 27.5% | 30.0% | 100.0% |
| | | Std. Residual | -.5 | -1.9 | .1 | -.2 | -.9 | .5 | 1.8 | |
| | 56-60 | Count | 18 | 19 | 20 | 36 | 5 | 71 | 52 | 221 |
| | | % within age of respondent | 8.1% | 8.6% | 9.0% | 16.3% | 2.3% | 32.1% | 23.5% | 100.0% |
| | | Std. Residual | .9 | -2.7 | -2.1 | .6 | -.6 | 2.2 | .9 | |
| | 61-65 | Count | 34 | 90 | 77 | 108 | 17 | 180 | 156 | 662 |
| | | % within age of respondent | 5.1% | 13.6% | 11.6% | 16.3% | 2.6% | 27.2% | 23.6% | 100.0% |
| | | Std. Residual | -1.4 | -1.4 | -1.9 | 1.1 | -.5 | 1.2 | 1.5 | |
| | 66-70 | Count | 57 | 134 | 100 | 124 | 25 | 187 | 180 | 807 |
| | | % within age of respondent | 7.1% | 16.6% | 12.4% | 15.4% | 3.1% | 23.2% | 22.3% | 100.0% |
| | | Std. Residual | .6 | .6 | -1.5 | .6 | .3 | -1.0 | .9 | |
| | 71-75 | Count | 50 | 151 | 149 | 101 | 22 | 178 | 131 | 782 |
| | | % within age of respondent | 6.4% | 19.3% | 19.1% | 12.9% | 2.8% | 22.8% | 16.8% | 100.0% |
| | | Std. Residual | -.1 | 2.5 | 3.4 | -1.2 | -.1 | -1.2 | -2.5 | |
| | over 75 | Count | 10 | 19 | 24 | 8 | 7 | 22 | 11 | 101 |
| | | % within age of respondent | 9.9% | 18.8% | 23.8% | 7.9% | 6.9% | 21.8% | 10.9% | 100.0% |
| | | Std. Residual | 1.3 | .8 | 2.5 | -1.8 | 2.4 | -.6 | -2.2 | |
| Total | | Count | 173 | 419 | 382 | 388 | 77 | 660 | 554 | 2653 |
| | | % within age of respondent | 6.5% | 15.8% | 14.4% | 14.6% | 2.9% | 24.9% | 20.9% | 100.0% |

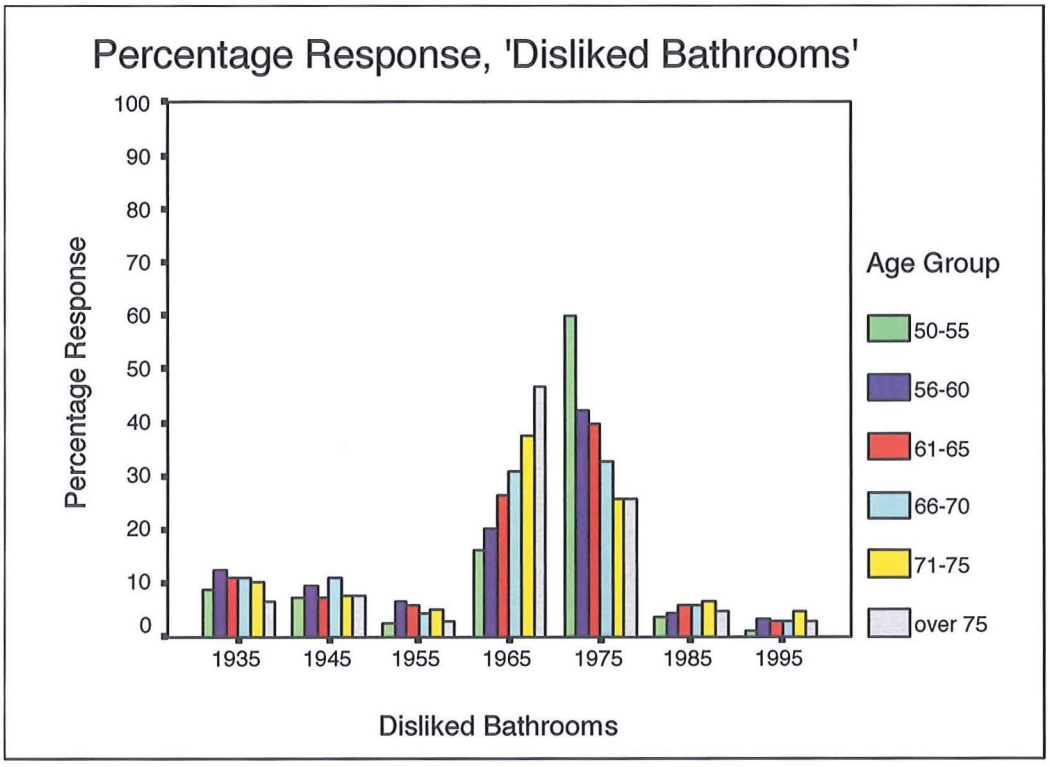


## Ap. Figure 15 - Analysis of disliked bathrooms

Phi was 0.20 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The 1965 and 1975 products are most often selected as disliked by all age groups. However, younger respondents are more likely to dislike the 1975 product whereas older respondents are more likely to dislike the 1965 product.

**age of respondent * disliked bathroom Crosstabulation**

| | | | disliked bathroom | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 7 | 6 | 2 | 13 | 48 | 3 | 1 | 80 |
| | | % within age of respondent | 8.8% | 7.5% | 2.5% | 16.3% | 60.0% | 3.8% | 1.3% | 100.0% |
| | | Std. Residual | -.6 | -.4 | -1.1 | -2.4 | 3.9 | -.8 | -1.1 | |
| | 56-60 | Count | 28 | 21 | 15 | 45 | 95 | 10 | 7 | 221 |
| | | % within age of respondent | 12.7% | 9.5% | 6.8% | 20.4% | 43.0% | 4.5% | 3.2% | 100.0% |
| | | Std. Residual | .8 | .3 | 1.0 | -3.0 | 2.2 | -.8 | -.2 | |
| | 61-65 | Count | 74 | 48 | 40 | 176 | 266 | 40 | 20 | 664 |
| | | % within age of respondent | 11.1% | 7.2% | 6.0% | 26.5% | 40.1% | 6.0% | 3.0% | 100.0% |
| | | Std. Residual | .2 | -1.4 | .9 | -2.3 | 2.6 | .1 | -.6 | |
| | 66-70 | Count | 91 | 90 | 37 | 253 | 267 | 47 | 24 | 809 |
| | | % within age of respondent | 11.2% | 11.1% | 4.6% | 31.3% | 33.0% | 5.8% | 3.0% | 100.0% |
| | | Std. Residual | .3 | 2.2 | -.8 | -.1 | -.6 | -.1 | -.8 | |
| | 71-75 | Count | 83 | 62 | 41 | 302 | 206 | 52 | 37 | 783 |
| | | % within age of respondent | 10.6% | 7.9% | 5.2% | 38.6% | 26.3% | 6.6% | 4.7% | 100.0% |
| | | Std. Residual | -.3 | -.9 | .1 | 3.5 | -3.8 | .8 | 1.9 | |
| | over 75 | Count | 7 | 8 | 3 | 49 | 27 | 5 | 3 | 102 |
| | | % within age of respondent | 6.9% | 7.8% | 2.9% | 48.0% | 26.5% | 4.9% | 2.9% | 100.0% |
| | | Std. Residual | -1.2 | -.3 | -1.0 | 3.0 | -1.3 | -.4 | -.3 | |
| Total | | Count | 290 | 235 | 138 | 838 | 909 | 157 | 92 | 2659 |
| | | % within age of respondent | 10.9% | 8.8% | 5.2% | 31.5% | 34.2% | 5.9% | 3.5% | 100.0% |

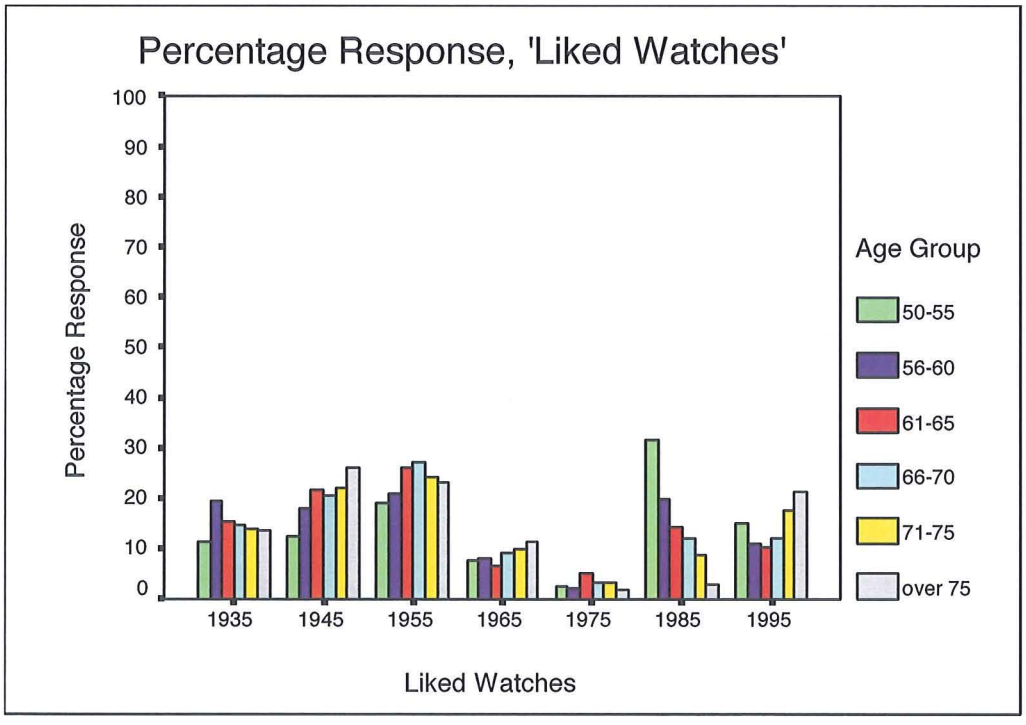


## Ap. Figure 16 - Analysis of liked watches

Phi was 0.19 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. However, the relationship here is complex. Older respondents concentrate around the 1945 and 1955 products, though there is also a trend for the two oldest groups to indicate a liking for the 1995 product. The two youngest groups are more variable in their selection with the 1985 product producing large residual scores amongst the 50 to 60 age brackets.

**age of respondent * liked watch Crosstabulation**

| | | | liked watch | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 9 | 10 | 15 | 6 | 2 | 25 | 12 | 79 |
| | | % within age of respondent | 11.4% | 12.7% | 19.0% | 7.6% | 2.5% | 31.6% | 15.2% | 100.0% |
| | | Std. Residual | -.8 | -1.6 | -1.1 | -.4 | -.5 | 4.7 | .3 | |
| | 56-60 | Count | 43 | 40 | 46 | 18 | 5 | 44 | 24 | 220 |
| | | % within age of respondent | 19.5% | 18.2% | 20.9% | 8.2% | 2.3% | 20.0% | 10.9% | 100.0% |
| | | Std. Residual | 1.8 | -.9 | -1.3 | -.3 | -1.0 | 3.1 | -1.1 | |
| | 61-65 | Count | 103 | 143 | 174 | 43 | 34 | 96 | 69 | 662 |
| | | % within age of respondent | 15.6% | 21.6% | 26.3% | 6.5% | 5.1% | 14.5% | 10.4% | 100.0% |
| | | Std. Residual | .4 | .3 | .5 | -2.0 | 2.1 | 1.3 | -2.3 | |
| | 66-70 | Count | 118 | 168 | 222 | 76 | 28 | 100 | 100 | 812 |
| | | % within age of respondent | 14.5% | 20.7% | 27.3% | 9.4% | 3.4% | 12.3% | 12.3% | 100.0% |
| | | Std. Residual | -.3 | -.2 | 1.2 | .6 | -.2 | -.3 | -1.1 | |
| | 71-75 | Count | 111 | 175 | 193 | 79 | 25 | 70 | 140 | 793 |
| | | % within age of respondent | 14.0% | 22.1% | 24.3% | 10.0% | 3.2% | 8.8% | 17.7% | 100.0% |
| | | Std. Residual | -.7 | .6 | -.5 | 1.1 | -.7 | -3.0 | 3.0 | |
| | over 75 | Count | 14 | 27 | 24 | 12 | 2 | 3 | 22 | 104 |
| | | % within age of respondent | 13.5% | 26.0% | 23.1% | 11.5% | 1.9% | 2.9% | 21.2% | 100.0% |
| | | Std. Residual | -.4 | 1.1 | -.4 | 1.0 | -.9 | -2.8 | 2.0 | |
| Total | | Count | 398 | 563 | 674 | 234 | 96 | 338 | 367 | 2670 |
| | | % within age of respondent | 14.9% | 21.1% | 25.2% | 8.8% | 3.6% | 12.7% | 13.7% | 100.0% |

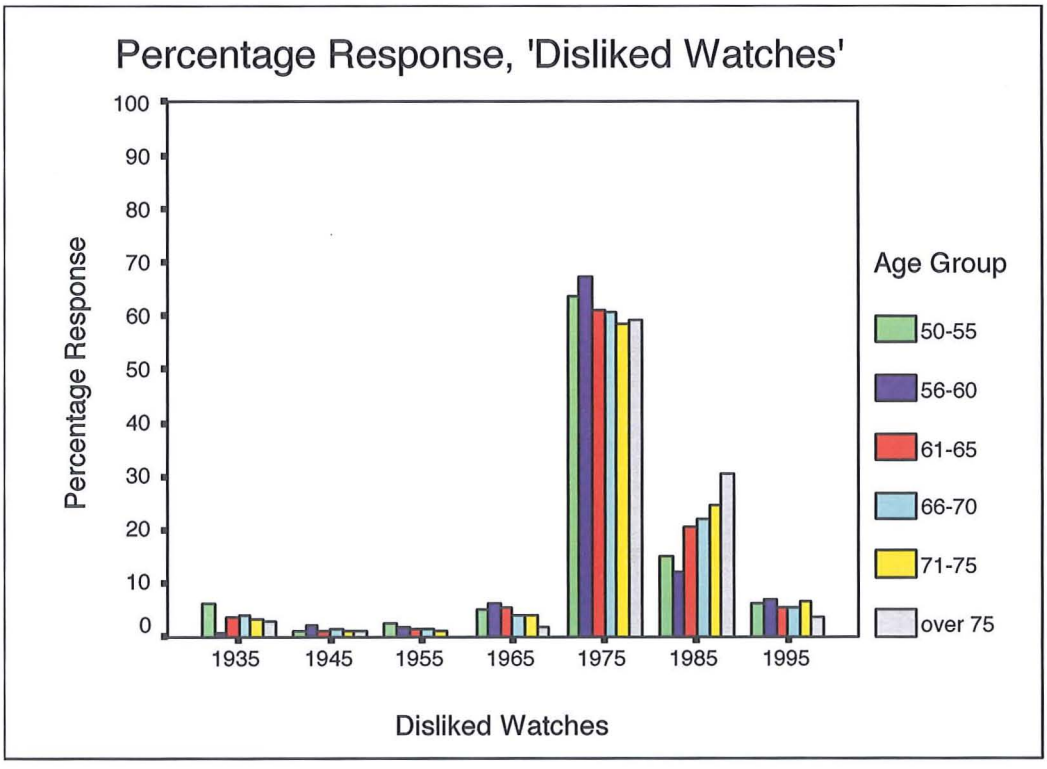


## Ap. Figure 17 - Analysis of disliked watches

The analysis indicates a statistically non-significant Phi coefficient (0.13; p<0.08) for the relationship between age and product year. All groups seem more likely to select the 1975 item over the other products.

**age of respondent * disliked watch Crosstabulation**

| | | | disliked watch | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | |
| age of respondent | 50-55 | Count | 5 | 1 | 2 | 4 | 51 | 12 | 5 | 80 |
| | | % within age of respondent | 6.3% | 1.3% | 2.5% | 5.0% | 63.8% | 15.0% | 6.3% | 100.0% |
| | | Std. Residual | 1.2 | .0 | .8 | .2 | .3 | -1.3 | .1 | |
| | 56-60 | Count | 2 | 5 | 4 | 14 | 151 | 27 | 16 | 219 |
| | | % within age of respondent | .9% | 2.3% | 1.8% | 6.4% | 68.9% | 12.3% | 7.3% | 100.0% |
| | | Std. Residual | -2.1 | 1.4 | .6 | 1.3 | 1.4 | -3.0 | .8 | |
| | 61-65 | Count | 25 | 7 | 11 | 36 | 407 | 137 | 37 | 660 |
| | | % within age of respondent | 3.8% | 1.1% | 1.7% | 5.5% | 61.7% | 20.8% | 5.6% | 100.0% |
| | | Std. Residual | .2 | -.4 | .6 | 1.2 | .1 | -.7 | -.4 | |
| | 66-70 | Count | 34 | 11 | 11 | 33 | 498 | 181 | 46 | 814 |
| | | % within age of respondent | 4.2% | 1.4% | 1.4% | 4.1% | 61.2% | 22.2% | 5.7% | 100.0% |
| | | Std. Residual | .8 | .3 | -.1 | -.6 | .0 | .2 | -.4 | |
| | 71-75 | Count | 28 | 8 | 9 | 31 | 468 | 197 | 52 | 793 |
| | | % within age of respondent | 3.5% | 1.0% | 1.1% | 3.9% | 59.0% | 24.8% | 6.6% | 100.0% |
| | | Std. Residual | -.2 | -.6 | -.6 | -.8 | -.8 | 1.7 | .6 | |
| | over 75 | Count | 3 | 1 | 0 | 2 | 62 | 32 | 4 | 104 |
| | | % within age of respondent | 2.9% | 1.0% | .0% | 1.9% | 59.6% | 30.8% | 3.8% | 100.0% |
| | | Std. Residual | -.4 | -.3 | -1.2 | -1.2 | -.2 | 1.9 | -.9 | |
| Total | | Count | 97 | 33 | 37 | 120 | 1637 | 586 | 160 | 2670 |
| | | % within age of respondent | 3.6% | 1.2% | 1.4% | 4.5% | 61.3% | 21.9% | 6.0% | 100.0% |

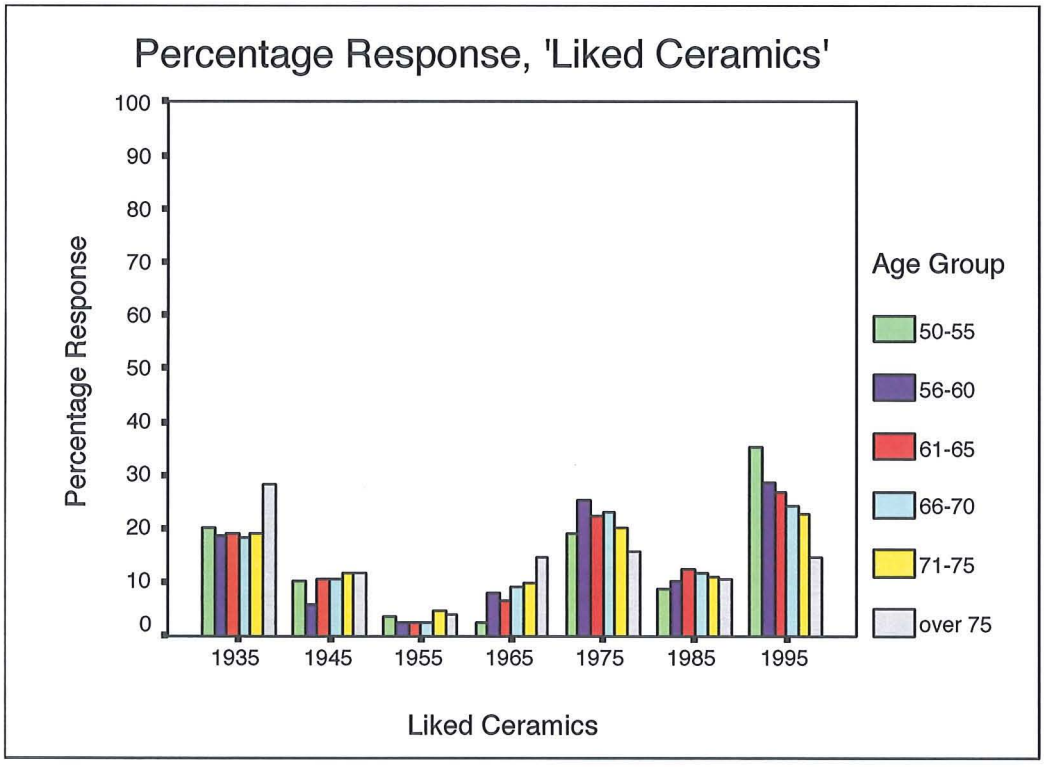


## Ap. Figure 18 - Analysis of liked ceramics

A Phi coefficient of 0.14 ($p<0.012$) was produced indicating a marginal, though significant, relationship between age and product year. The data shows a tendency for younger respondents to prefer the newest product (1995) whereas the oldest respondents seem to prefer the oldest product (1935).

**age of respondent * liked ceramic Crosstabulation**

| | | | liked ceramic | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 16 | 8 | 3 | 2 | 15 | 7 | 28 | 79 |
| | | % within age of respondent | 20.3% | 10.1% | 3.8% | 2.5% | 19.0% | 8.9% | 35.4% | 100.0% |
| | | Std. Residual | .2 | -.1 | .2 | -1.9 | -.5 | -.7 | 1.9 | |
| | 56-60 | Count | 42 | 13 | 6 | 18 | 56 | 23 | 64 | 222 |
| | | % within age of respondent | 18.9% | 5.9% | 2.7% | 8.1% | 25.2% | 10.4% | 28.8% | 100.0% |
| | | Std. Residual | -.1 | -2.2 | -.5 | -.3 | 1.1 | -.5 | 1.2 | |
| | 61-65 | Count | 125 | 70 | 16 | 43 | 147 | 82 | 177 | 660 |
| | | % within age of respondent | 18.9% | 10.6% | 2.4% | 6.5% | 22.3% | 12.4% | 26.8% | 100.0% |
| | | Std. Residual | -.2 | .0 | -1.3 | -1.9 | .2 | .8 | 1.0 | |
| | 66-70 | Count | 148 | 86 | 21 | 73 | 186 | 93 | 195 | 802 |
| | | % within age of respondent | 18.5% | 10.7% | 2.6% | 9.1% | 23.2% | 11.6% | 24.3% | 100.0% |
| | | Std. Residual | -.5 | .1 | -1.1 | .4 | .8 | .2 | -.3 | |
| | 71-75 | Count | 152 | 93 | 38 | 80 | 161 | 87 | 181 | 792 |
| | | % within age of respondent | 19.2% | 11.7% | 4.8% | 10.1% | 20.3% | 11.0% | 22.9% | 100.0% |
| | | Std. Residual | .0 | 1.0 | 2.3 | 1.3 | -.9 | -.3 | -1.1 | |
| | over 75 | Count | 29 | 12 | 4 | 15 | 16 | 11 | 15 | 102 |
| | | % within age of respondent | 28.4% | 11.8% | 3.9% | 14.7% | 15.7% | 10.8% | 14.7% | 100.0% |
| | | Std. Residual | 2.1 | .4 | .3 | 2.1 | -1.3 | -.2 | -2.1 | |
| Total | | Count | 512 | 282 | 88 | 231 | 581 | 303 | 660 | 2657 |
| | | % within age of respondent | 19.3% | 10.6% | 3.3% | 8.7% | 21.9% | 11.4% | 24.8% | 100.0% |

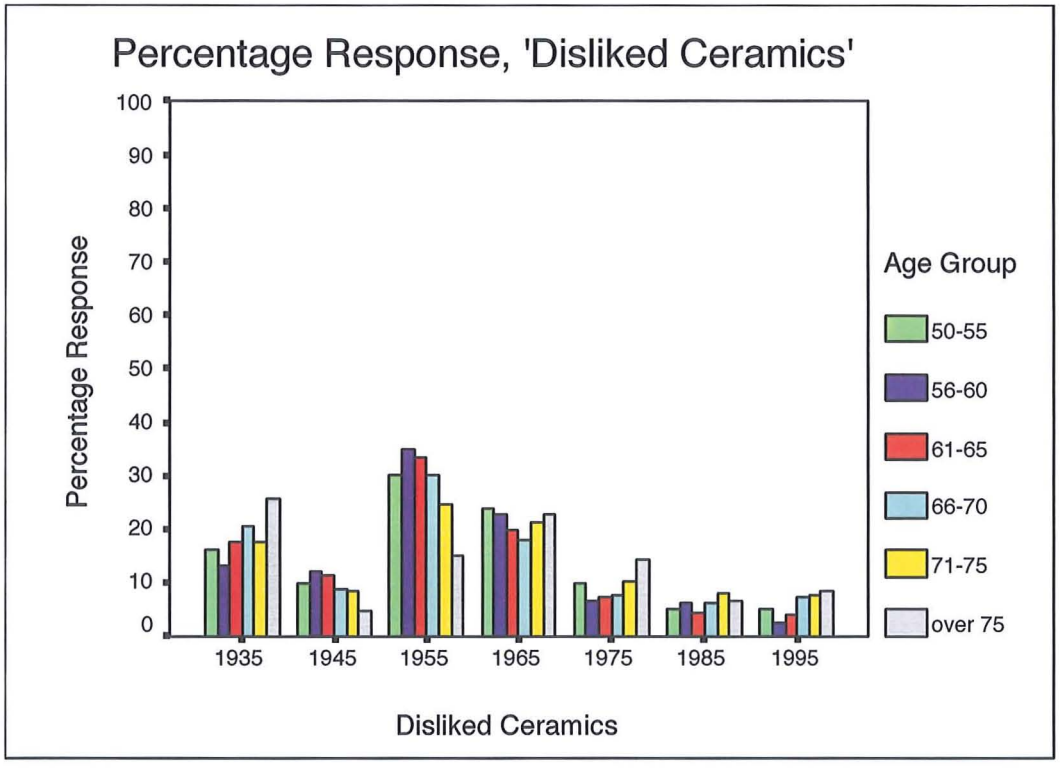


## Ap. Figure 19 - Analysis of disliked ceramics

Phi was 0.17 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data suggests a tendency for most age groups to dislike the 1955 product, though this is less likely amongst the older groups who also show a tendency to dislike 1935 and 1965 products.

**age of respondent * disliked ceramic Crosstabulation**

| | | | disliked ceramic | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 13 | 8 | 24 | 19 | 8 | 4 | 4 | 80 |
| | | % within age of respondent | 16.3% | 10.0% | 30.0% | 23.8% | 10.0% | 5.0% | 5.0% | 100.0% |
| | | Std. Residual | -.5 | .1 | .1 | .6 | .4 | -.5 | -.5 | |
| | 56-60 | Count | 30 | 27 | 78 | 51 | 15 | 14 | 6 | 221 |
| | | % within age of respondent | 13.6% | 12.2% | 35.3% | 23.1% | 6.8% | 6.3% | 2.7% | 100.0% |
| | | Std. Residual | -1.8 | 1.2 | 1.5 | .8 | -1.0 | -.1 | -2.1 | |
| | 61-65 | Count | 118 | 77 | 224 | 133 | 49 | 30 | 27 | 658 |
| | | % within age of respondent | 17.9% | 11.7% | 34.0% | 20.2% | 7.4% | 4.6% | 4.1% | 100.0% |
| | | Std. Residual | -.5 | 1.7 | 2.1 | -.2 | -1.1 | -1.9 | -2.2 | |
| | 66-70 | Count | 169 | 71 | 248 | 147 | 62 | 50 | 60 | 807 |
| | | % within age of respondent | 20.9% | 8.8% | 30.7% | 18.2% | 7.7% | 6.2% | 7.4% | 100.0% |
| | | Std. Residual | 1.4 | -.8 | .6 | -1.4 | -1.0 | -.3 | 1.3 | |
| | 71-75 | Count | 141 | 69 | 197 | 171 | 83 | 66 | 61 | 788 |
| | | % within age of respondent | 17.9% | 8.8% | 25.0% | 21.7% | 10.5% | 8.4% | 7.7% | 100.0% |
| | | Std. Residual | -.6 | -.8 | -2.4 | .7 | 1.7 | 2.1 | 1.6 | |
| | over 75 | Count | 27 | 5 | 16 | 24 | 15 | 7 | 9 | 103 |
| | | % within age of respondent | 26.2% | 4.9% | 15.5% | 23.3% | 14.6% | 6.8% | 8.7% | 100.0% |
| | | Std. Residual | 1.8 | -1.6 | -2.6 | .6 | 2.0 | .1 | 1.0 | |
| Total | | Count | 498 | 257 | 787 | 545 | 232 | 171 | 167 | 2657 |
| | | % within age of respondent | 18.7% | 9.7% | 29.6% | 20.5% | 8.7% | 6.4% | 6.3% | 100.0% |

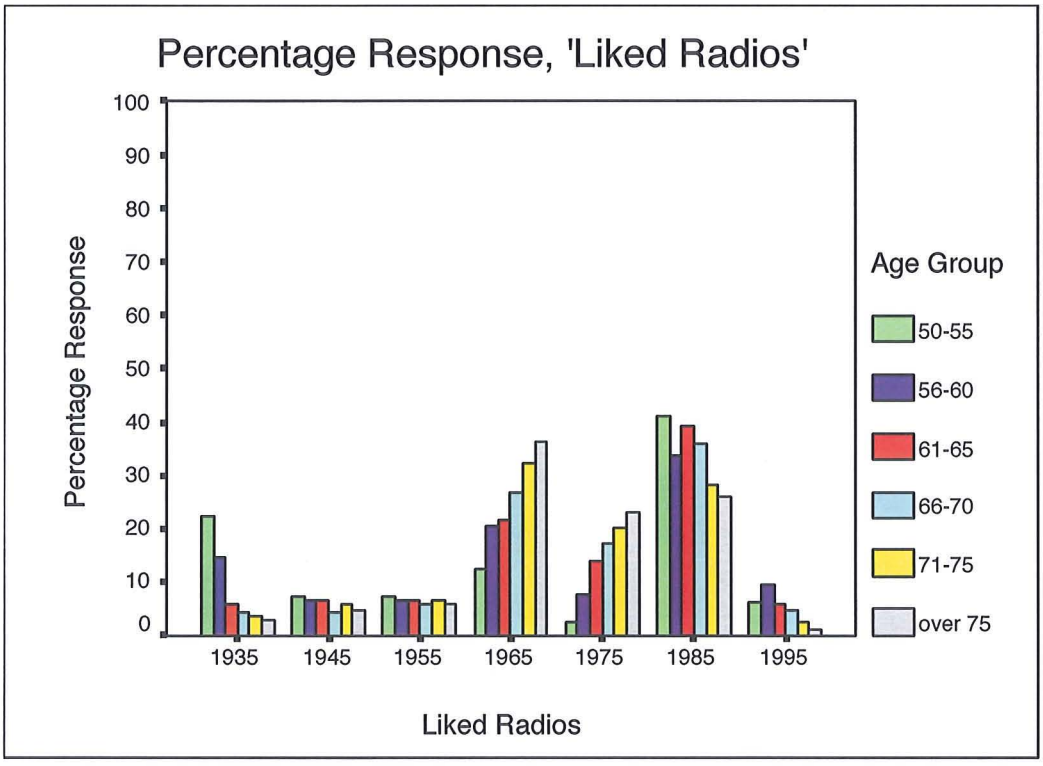


## Ap. Figure 20 - Analysis of liked radios

Phi was 0.26 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data suggests that the 1965, 1975 and 1985 products are the most liked amongst the respondents. However, these preferences are influenced somewhat by age, with younger respondents preferring the 1985 product and the older respondents showing more of a preference for the 1965 product.

**age of respondent * liked radio Crosstabulation**

| | | | liked radio | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 18 | 6 | 6 | 10 | 2 | 33 | 5 | 80 |
| | | % within age of respondent | 22.5% | 7.5% | 7.5% | 12.5% | 2.5% | 41.3% | 6.3% | 100.0% |
| | | Std. Residual | 6.1 | .6 | .4 | -2.5 | -3.1 | 1.1 | .7 | |
| | 56-60 | Count | 33 | 15 | 15 | 46 | 17 | 75 | 21 | 222 |
| | | % within age of respondent | 14.9% | 6.8% | 6.8% | 20.7% | 7.7% | 33.8% | 9.5% | 100.0% |
| | | Std. Residual | 5.5 | .6 | .2 | -1.7 | -3.2 | -.1 | 3.3 | |
| | 61-65 | Count | 38 | 44 | 45 | 144 | 92 | 260 | 39 | 662 |
| | | % within age of respondent | 5.7% | 6.6% | 6.8% | 21.8% | 13.9% | 39.3% | 5.9% | 100.0% |
| | | Std. Residual | -.1 | .9 | .3 | -2.5 | -1.6 | 2.3 | 1.4 | |
| | 66-70 | Count | 36 | 37 | 48 | 219 | 141 | 292 | 38 | 811 |
| | | % within age of respondent | 4.4% | 4.6% | 5.9% | 27.0% | 17.4% | 36.0% | 4.7% | 100.0% |
| | | Std. Residual | -1.7 | -1.4 | -.6 | .2 | .7 | .9 | .0 | |
| | 71-75 | Count | 29 | 47 | 53 | 257 | 161 | 226 | 21 | 794 |
| | | % within age of respondent | 3.7% | 5.9% | 6.7% | 32.4% | 20.3% | 28.5% | 2.6% | 100.0% |
| | | Std. Residual | -2.6 | .2 | .2 | 3.1 | 2.7 | -2.7 | -2.6 | |
| | over 75 | Count | 3 | 5 | 6 | 38 | 24 | 27 | 1 | 104 |
| | | % within age of respondent | 2.9% | 4.8% | 5.8% | 36.5% | 23.1% | 26.0% | 1.0% | 100.0% |
| | | Std. Residual | -1.3 | -.4 | -.3 | 1.9 | 1.7 | -1.4 | -1.8 | |
| Total | | Count | 157 | 154 | 173 | 714 | 437 | 913 | 125 | 2673 |
| | | % within age of respondent | 5.9% | 5.8% | 6.5% | 26.7% | 16.3% | 34.2% | 4.7% | 100.0% |

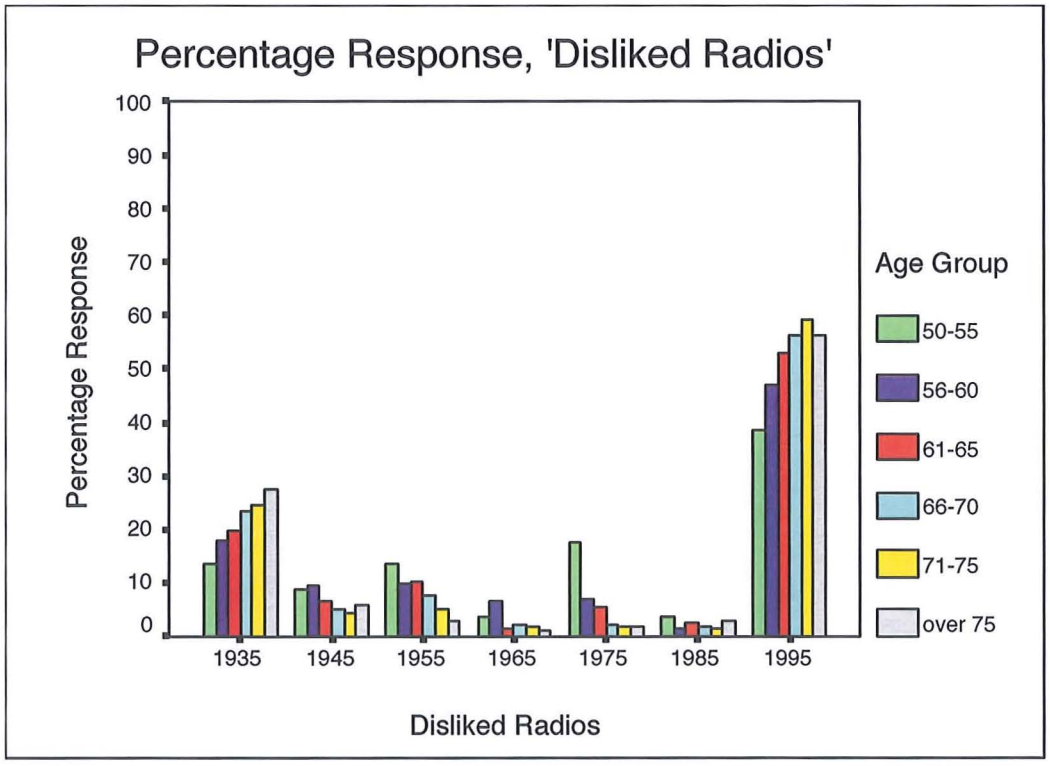


## Ap. Figure 21 - Analysis of disliked radios

Phi was 0.23 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data indicates that all age groups dislike the newest product, though there was also a tendency for the oldest product to be disliked too, particularly amongst the older groups.

**age of respondent * disliked radio Crosstabulation**

| | | | disliked radio | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 11 | 7 | 11 | 3 | 14 | 3 | 31 | 80 |
| | | % within age of respondent | 13.8% | 8.8% | 13.8% | 3.8% | 17.5% | 3.8% | 38.8% | 100.0% |
| | | Std. Residual | -1.7 | 1.1 | 1.9 | .8 | 6.4 | 1.0 | -2.0 | |
| | 56-60 | Count | 40 | 21 | 22 | 15 | 16 | 3 | 105 | 222 |
| | | % within age of respondent | 18.0% | 9.5% | 9.9% | 6.8% | 7.2% | 1.4% | 47.3% | 100.0% |
| | | Std. Residual | -1.4 | 2.3 | 1.1 | 4.3 | 2.7 | -.8 | -1.7 | |
| | 61-65 | Count | 132 | 44 | 69 | 11 | 36 | 18 | 354 | 664 |
| | | % within age of respondent | 19.9% | 6.6% | 10.4% | 1.7% | 5.4% | 2.7% | 53.3% | 100.0% |
| | | Std. Residual | -1.4 | .9 | 2.3 | -1.2 | 2.3 | 1.1 | -.8 | |
| | 66-70 | Count | 193 | 41 | 64 | 18 | 17 | 16 | 462 | 811 |
| | | % within age of respondent | 23.8% | 5.1% | 7.9% | 2.2% | 2.1% | 2.0% | 57.0% | 100.0% |
| | | Std. Residual | .8 | -.9 | .0 | -.3 | -2.4 | -.2 | .5 | |
| | 71-75 | Count | 197 | 36 | 42 | 15 | 14 | 13 | 475 | 792 |
| | | % within age of respondent | 24.9% | 4.5% | 5.3% | 1.9% | 1.8% | 1.6% | 60.0% | 100.0% |
| | | Std. Residual | 1.4 | -1.5 | -2.6 | -.9 | -2.8 | -.9 | 1.6 | |
| | over 75 | Count | 29 | 6 | 3 | 1 | 2 | 3 | 59 | 103 |
| | | % within age of respondent | 28.2% | 5.8% | 2.9% | 1.0% | 1.9% | 2.9% | 57.3% | 100.0% |
| | | Std. Residual | 1.2 | .0 | -1.8 | -.9 | -.9 | .6 | .2 | |
| Total | | Count | 602 | 155 | 211 | 63 | 99 | 56 | 1486 | 2672 |
| | | % within age of respondent | 22.5% | 5.8% | 7.9% | 2.4% | 3.7% | 2.1% | 55.6% | 100.0% |

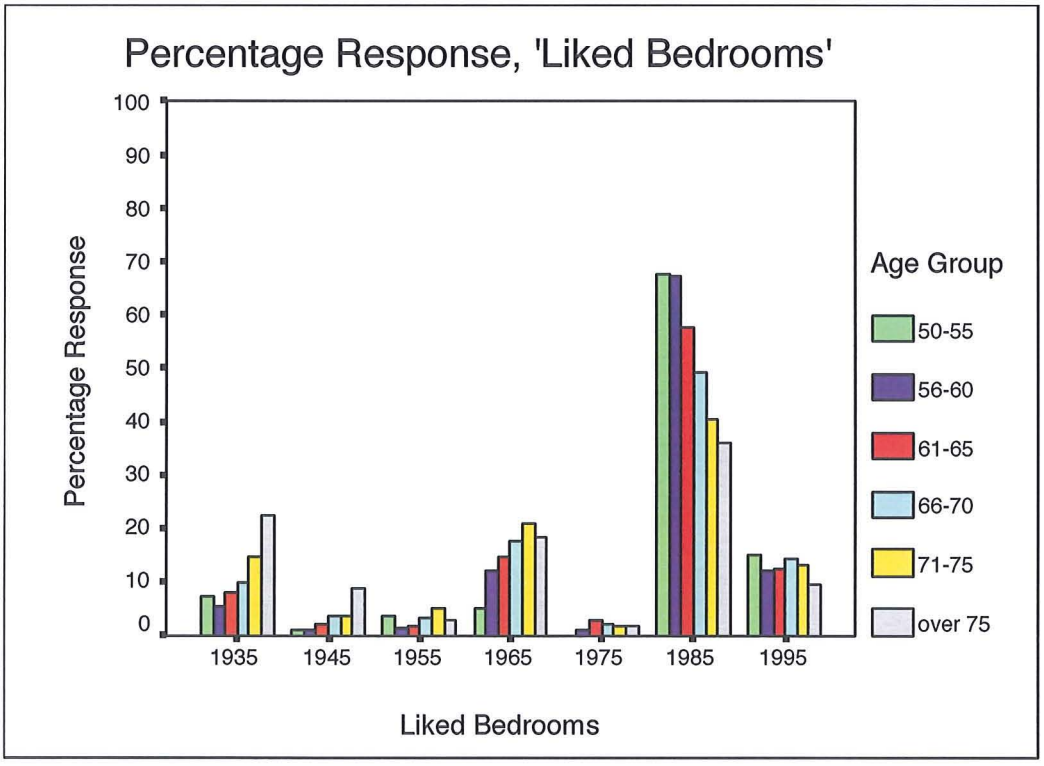


## Ap. Figure 22 - Analysis of liked bedrooms

Phi was 0.23 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. All age groups indicated a liking for the 1985 product, though the older groups were also likely to show a preference for the oldest (1935) product.

**age of respondent * liked bedroom Crosstabulation**

| | | | liked bedroom | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | |
| age of respondent | 50-55 | Count | 6 | 1 | 3 | 4 | 0 | 54 | 12 | 80 |
| | | % within age of respondent | 7.5% | 1.3% | 3.8% | 5.0% | .0% | 67.5% | 15.0% | 100.0% |
| | | Std. Residual | -.9 | -1.0 | .2 | -2.6 | -1.3 | 2.2 | .5 | |
| | 56-60 | Count | 12 | 2 | 3 | 26 | 2 | 146 | 26 | 217 |
| | | % within age of respondent | 5.5% | .9% | 1.4% | 12.0% | .9% | 67.3% | 12.0% | 100.0% |
| | | Std. Residual | -2.4 | -1.9 | -1.6 | -1.8 | -1.2 | 3.5 | -.5 | |
| | 61-65 | Count | 52 | 14 | 12 | 97 | 20 | 378 | 81 | 654 |
| | | % within age of respondent | 8.0% | 2.1% | 1.8% | 14.8% | 3.1% | 57.8% | 12.4% | 100.0% |
| | | Std. Residual | -2.3 | -1.6 | -2.1 | -1.4 | 1.7 | 2.7 | -.5 | |
| | 66-70 | Count | 79 | 30 | 26 | 142 | 17 | 397 | 115 | 806 |
| | | % within age of respondent | 9.8% | 3.7% | 3.2% | 17.6% | 2.1% | 49.3% | 14.3% | 100.0% |
| | | Std. Residual | -.9 | .7 | -.2 | .4 | .1 | -.4 | .9 | |
| | 71-75 | Count | 116 | 30 | 41 | 164 | 14 | 317 | 103 | 785 |
| | | % within age of respondent | 14.8% | 3.8% | 5.2% | 20.9% | 1.8% | 40.4% | 13.1% | 100.0% |
| | | Std. Residual | 3.3 | .9 | 2.9 | 2.6 | -.6 | -3.9 | .0 | |
| | over 75 | Count | 23 | 9 | 3 | 19 | 2 | 37 | 10 | 103 |
| | | % within age of respondent | 22.3% | 8.7% | 2.9% | 18.4% | 1.9% | 35.9% | 9.7% | 100.0% |
| | | Std. Residual | 3.5 | 3.1 | -.2 | .3 | -.1 | -2.1 | -1.0 | |
| Total | | Count | 288 | 86 | 88 | 452 | 55 | 1329 | 347 | 2645 |
| | | % within age of respondent | 10.9% | 3.3% | 3.3% | 17.1% | 2.1% | 50.2% | 13.1% | 100.0% |

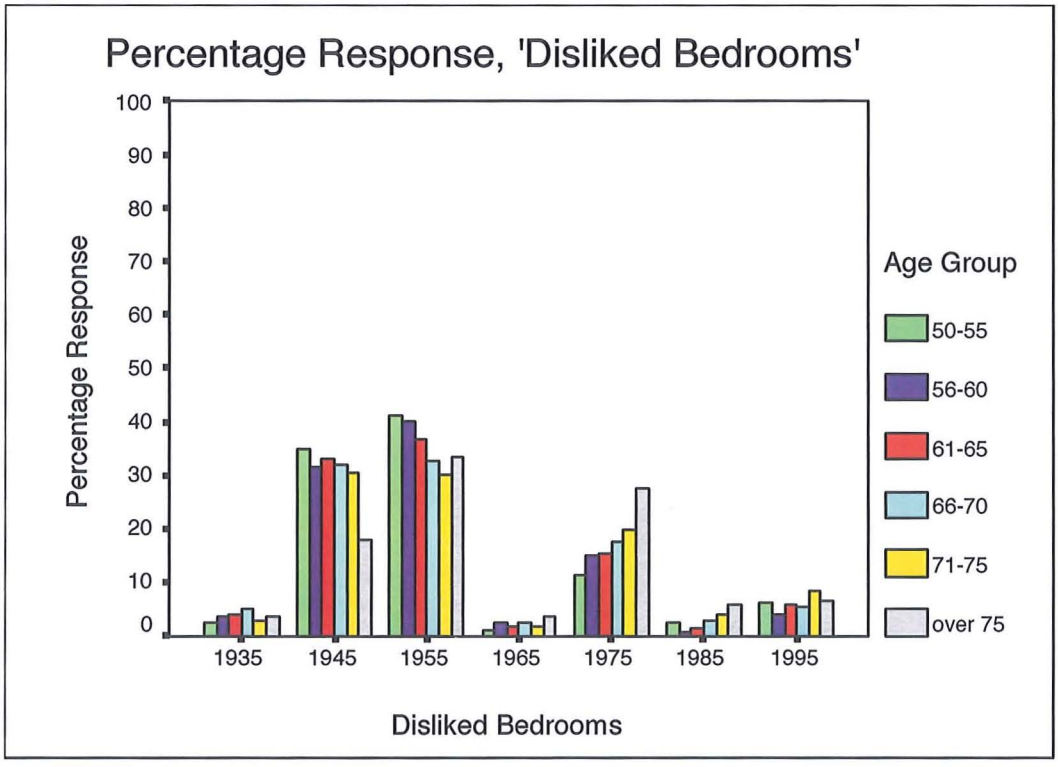


## Ap. Figure 23 - Analysis of disliked bedrooms

Phi was 0.15 (p=0.001) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. All groups were likely to indicate a dislike for the 1945 and 1955 products, though there is also a trend for older respondents to indicate a dislike for the 1975 product rather than the 1945 product.

**age of respondent * disliked bedroom Crosstabulation**

| | | | disliked bedroom | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 2 | 28 | 33 | 1 | 9 | 2 | 5 | 80 |
| | | % within age of respondent | 2.5% | 35.0% | 41.3% | 1.3% | 11.3% | 2.5% | 6.3% | 100.0% |
| | | Std. Residual | -.7 | .5 | 1.0 | -.6 | -1.4 | -.2 | -.1 | |
| | 56-60 | Count | 8 | 71 | 90 | 6 | 34 | 2 | 9 | 220 |
| | | % within age of respondent | 3.6% | 32.3% | 40.9% | 2.7% | 15.5% | .9% | 4.1% | 100.0% |
| | | Std. Residual | -.3 | .1 | 1.6 | .5 | -.9 | -1.7 | -1.4 | |
| | 61-65 | Count | 28 | 221 | 246 | 13 | 103 | 9 | 39 | 659 |
| | | % within age of respondent | 4.2% | 33.5% | 37.3% | 2.0% | 15.6% | 1.4% | 5.9% | 100.0% |
| | | Std. Residual | .2 | .7 | 1.3 | -.4 | -1.4 | -2.2 | -.6 | |
| | 66-70 | Count | 42 | 263 | 268 | 20 | 145 | 23 | 44 | 805 |
| | | % within age of respondent | 5.2% | 32.7% | 33.3% | 2.5% | 18.0% | 2.9% | 5.5% | 100.0% |
| | | Std. Residual | 1.6 | .4 | -.6 | .6 | .0 | .1 | -1.1 | |
| | 71-75 | Count | 25 | 245 | 242 | 14 | 158 | 33 | 68 | 785 |
| | | % within age of respondent | 3.2% | 31.2% | 30.8% | 1.8% | 20.1% | 4.2% | 8.7% | 100.0% |
| | | Std. Residual | -1.3 | -.4 | -1.7 | -.8 | 1.4 | 2.3 | 2.4 | |
| | over 75 | Count | 4 | 19 | 35 | 4 | 29 | 6 | 7 | 104 |
| | | % within age of respondent | 3.8% | 18.3% | 33.7% | 3.8% | 27.9% | 5.8% | 6.7% | 100.0% |
| | | Std. Residual | -.1 | -2.5 | -.1 | 1.1 | 2.4 | 1.8 | .1 | |
| Total | | Count | 109 | 847 | 914 | 58 | 478 | 75 | 172 | 2653 |
| | | % within age of respondent | 4.1% | 31.9% | 34.5% | 2.2% | 18.0% | 2.8% | 6.5% | 100.0% |

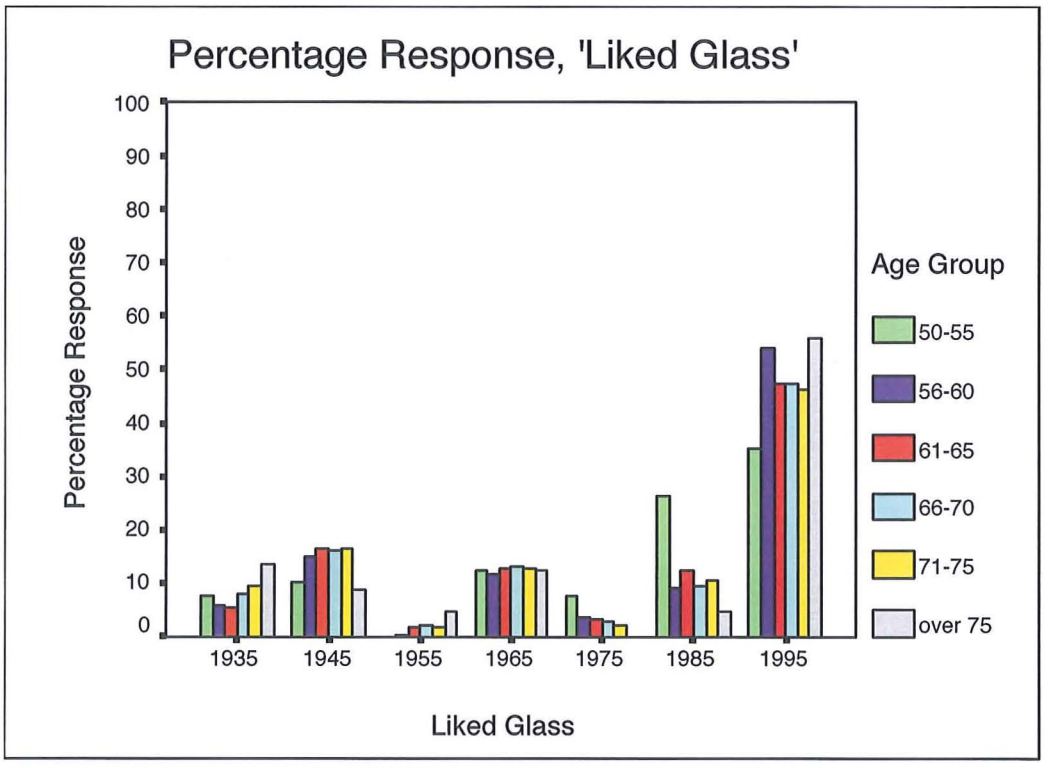


## Ap. Figure 24 - Analysis of liked glass

Phi was 0.16 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data indicates that the 1995 product was liked by the majority of respondents, though there was also a trend for older respondents to be more likely to indicate a liking for the oldest product.

**age of respondent * liked glass Crosstabulation**

| | | | liked glass | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | |
| age of respondent | 50-55 | Count | 6 | 8 | 0 | 10 | 6 | 21 | 28 | 79 |
| | | % within age of respondent | 7.6% | 10.1% | .0% | 12.7% | 7.6% | 26.6% | 35.4% | 100.0% |
| | | Std. Residual | -.1 | -1.3 | -1.3 | .0 | 2.4 | 4.2 | -1.6 | |
| | 56-60 | Count | 13 | 33 | 1 | 26 | 8 | 20 | 119 | 220 |
| | | % within age of respondent | 5.9% | 15.0% | .5% | 11.8% | 3.6% | 9.1% | 54.1% | 100.0% |
| | | Std. Residual | -1.0 | -.3 | -1.6 | -.4 | .6 | -.8 | 1.4 | |
| | 61-65 | Count | 36 | 109 | 12 | 86 | 22 | 82 | 315 | 662 |
| | | % within age of respondent | 5.4% | 16.5% | 1.8% | 13.0% | 3.3% | 12.4% | 47.6% | 100.0% |
| | | Std. Residual | -2.2 | .4 | -.3 | .1 | .5 | 1.2 | .0 | |
| | 66-70 | Count | 65 | 131 | 19 | 106 | 25 | 79 | 386 | 811 |
| | | % within age of respondent | 8.0% | 16.2% | 2.3% | 13.1% | 3.1% | 9.7% | 47.6% | 100.0% |
| | | Std. Residual | .2 | .3 | .7 | .2 | .1 | -1.0 | .0 | |
| | 71-75 | Count | 75 | 132 | 16 | 102 | 19 | 84 | 368 | 796 |
| | | % within age of respondent | 9.4% | 16.6% | 2.0% | 12.8% | 2.4% | 10.6% | 46.2% | 100.0% |
| | | Std. Residual | 1.6 | .6 | .1 | .0 | -1.0 | -.3 | -.6 | |
| | over 75 | Count | 14 | 9 | 5 | 13 | 0 | 5 | 58 | 104 |
| | | % within age of respondent | 13.5% | 8.7% | 4.8% | 12.5% | .0% | 4.8% | 55.8% | 100.0% |
| | | Std. Residual | 2.1 | -1.8 | 2.0 | -.1 | -1.8 | -1.9 | 1.2 | |
| Total | | Count | 209 | 422 | 53 | 343 | 80 | 291 | 1274 | 2672 |
| | | % within age of respondent | 7.8% | 15.8% | 2.0% | 12.8% | 3.0% | 10.9% | 47.7% | 100.0% |

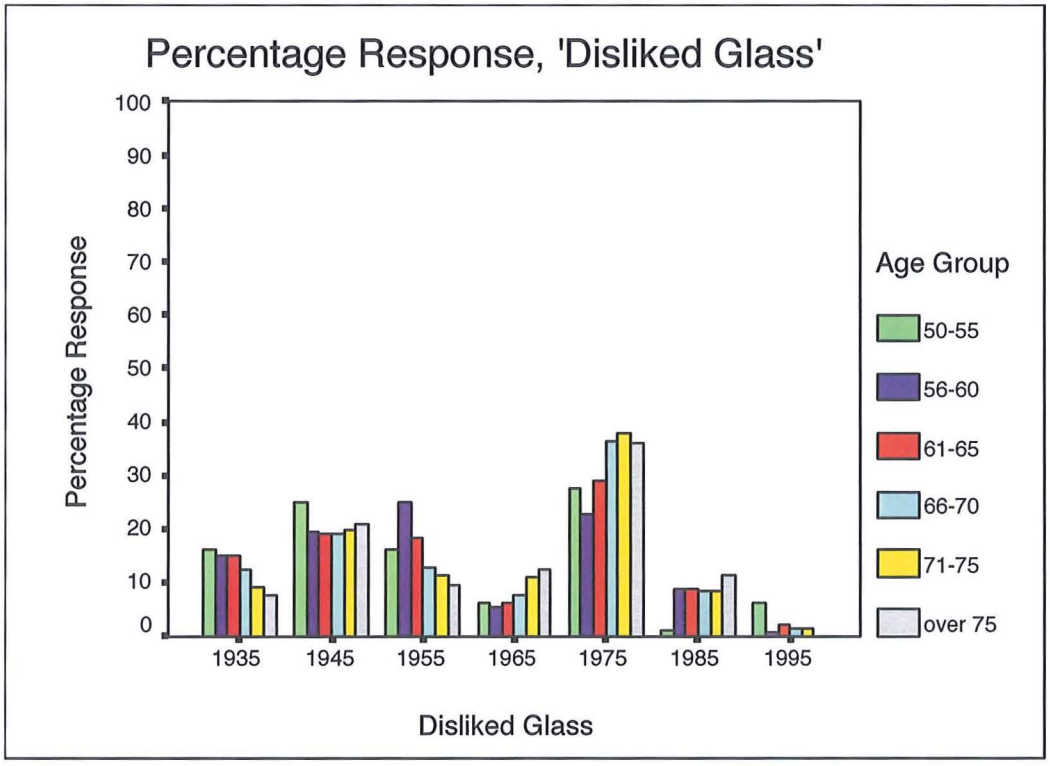


## Ap. Figure 25 - Analysis of disliked glass

Phi was 0.20 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data indicates that respondents were most likely to dislike the 1975 product, though younger respondents were more likely to also dislike the 1945 product.

**age of respondent * disliked glass Crosstabulation**

| | | | disliked glass | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 13 | 20 | 13 | 5 | 22 | 1 | 5 | 79 |
| | | % within age of respondent | 16.5% | 25.3% | 16.5% | 6.3% | 27.8% | 1.3% | 6.3% | 100.0% |
| | | Std. Residual | 1.0 | 1.1 | .3 | -.6 | -.9 | -2.2 | 3.2 | |
| | 56-60 | Count | 34 | 44 | 56 | 12 | 51 | 20 | 2 | 219 |
| | | % within age of respondent | 15.5% | 20.1% | 25.6% | 5.5% | 23.3% | 9.1% | .9% | 100.0% |
| | | Std. Residual | 1.3 | .1 | 4.0 | -1.4 | -2.7 | .3 | -.9 | |
| | 61-65 | Count | 101 | 127 | 124 | 41 | 194 | 60 | 15 | 662 |
| | | % within age of respondent | 15.3% | 19.2% | 18.7% | 6.2% | 29.3% | 9.1% | 2.3% | 100.0% |
| | | Std. Residual | 2.0 | -.4 | 2.4 | -1.9 | -2.1 | .4 | 1.1 | |
| | 66-70 | Count | 103 | 158 | 106 | 62 | 297 | 69 | 11 | 806 |
| | | % within age of respondent | 12.8% | 19.6% | 13.2% | 7.7% | 36.8% | 8.6% | 1.4% | 100.0% |
| | | Std. Residual | .3 | -.2 | -1.4 | -.6 | 1.4 | .0 | -.7 | |
| | 71-75 | Count | 73 | 158 | 92 | 88 | 305 | 67 | 12 | 795 |
| | | % within age of respondent | 9.2% | 19.9% | 11.6% | 11.1% | 38.4% | 8.4% | 1.5% | 100.0% |
| | | Std. Residual | -2.6 | .0 | -2.5 | 2.7 | 2.1 | -.2 | -.4 | |
| | over 75 | Count | 8 | 22 | 10 | 13 | 38 | 12 | 0 | 103 |
| | | % within age of respondent | 7.8% | 21.4% | 9.7% | 12.6% | 36.9% | 11.7% | .0% | 100.0% |
| | | Std. Residual | -1.3 | .3 | -1.4 | 1.5 | .5 | 1.1 | -1.3 | |
| Total | | Count | 332 | 529 | 401 | 221 | 907 | 229 | 45 | 2664 |
| | | % within age of respondent | 12.5% | 19.9% | 15.1% | 8.3% | 34.0% | 8.6% | 1.7% | 100.0% |

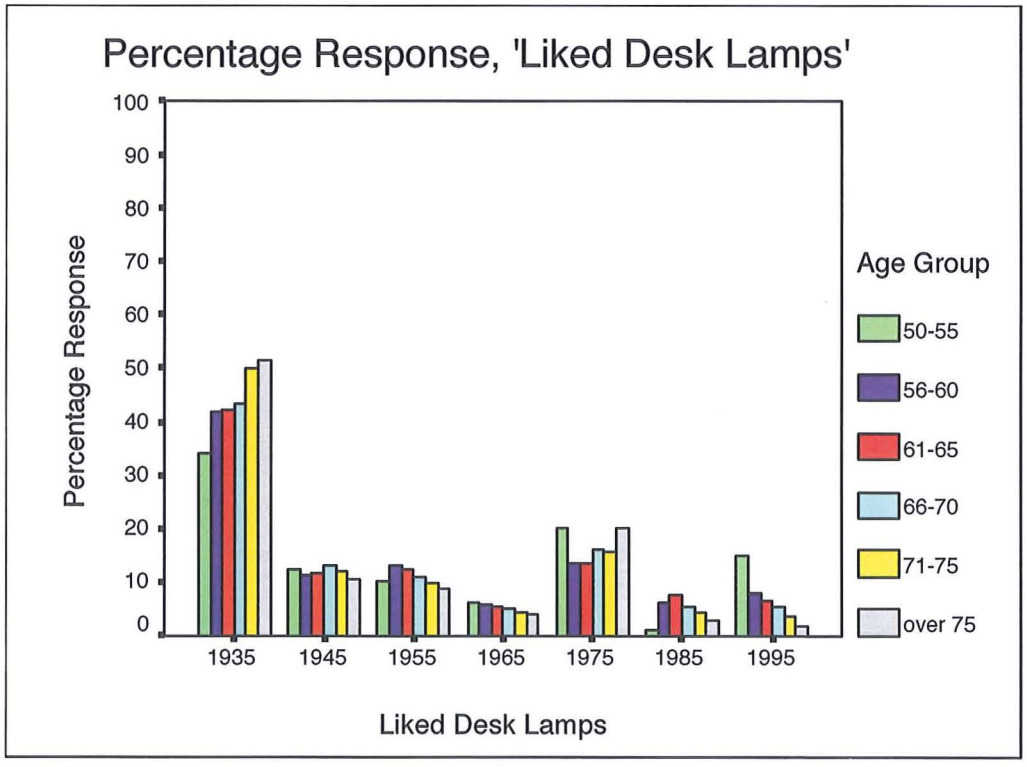


## Ap. Figure 26 - Analysis of liked desk lamp

Phi was 0.14 ($p<0.004$) for the relationship between age and product year. This suggests a small, albeit statistical significant, relationship between the two variables. The data indicates that most respondents liked the oldest product. The small relationship seems to be the result of older respondents being increasingly more likely to prefer the 1935 product: i.e., the percentage of respondents indicating such a preference increases from 34% for amongst the youngest age group to 51.5% amongst the oldest.

**age of respondent * liked desk lamp Crosstabulation**

| | | | liked desk lamp | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 27 | 10 | 8 | 5 | 16 | 1 | 12 | 79 |
| | | % within age of respondent | 34.2% | 12.7% | 10.1% | 6.3% | 20.3% | 1.3% | 15.2% | 100.0% |
| | | Std. Residual | -1.4 | .1 | -.2 | .5 | 1.1 | -1.6 | 3.5 | |
| | 56-60 | Count | 93 | 25 | 29 | 13 | 30 | 14 | 18 | 222 |
| | | % within age of respondent | 41.9% | 11.3% | 13.1% | 5.9% | 13.5% | 6.3% | 8.1% | 100.0% |
| | | Std. Residual | -.7 | -.4 | .9 | .5 | -.7 | .5 | 1.5 | |
| | 61-65 | Count | 277 | 76 | 82 | 36 | 90 | 50 | 43 | 654 |
| | | % within age of respondent | 42.4% | 11.6% | 12.5% | 5.5% | 13.8% | 7.6% | 6.6% | 100.0% |
| | | Std. Residual | -1.0 | -.4 | 1.2 | .5 | -1.1 | 2.2 | 1.0 | |
| | 66-70 | Count | 346 | 106 | 87 | 42 | 129 | 44 | 45 | 799 |
| | | % within age of respondent | 43.3% | 13.3% | 10.9% | 5.3% | 16.1% | 5.5% | 5.6% | 100.0% |
| | | Std. Residual | -.7 | .9 | -.1 | .2 | .5 | -.1 | -.1 | |
| | 71-75 | Count | 389 | 94 | 76 | 34 | 122 | 35 | 30 | 780 |
| | | % within age of respondent | 49.9% | 12.1% | 9.7% | 4.4% | 15.6% | 4.5% | 3.8% | 100.0% |
| | | Std. Residual | 2.1 | -.1 | -1.1 | -.9 | .1 | -1.3 | -2.2 | |
| | over 75 | Count | 53 | 11 | 9 | 4 | 21 | 3 | 2 | 103 |
| | | % within age of respondent | 51.5% | 10.7% | 8.7% | 3.9% | 20.4% | 2.9% | 1.9% | 100.0% |
| | | Std. Residual | 1.0 | -.4 | -.7 | -.5 | 1.3 | -1.1 | -1.6 | |
| Total | | Count | 1185 | 322 | 291 | 134 | 408 | 147 | 150 | 2637 |
| | | % within age of respondent | 44.9% | 12.2% | 11.0% | 5.1% | 15.5% | 5.6% | 5.7% | 100.0% |

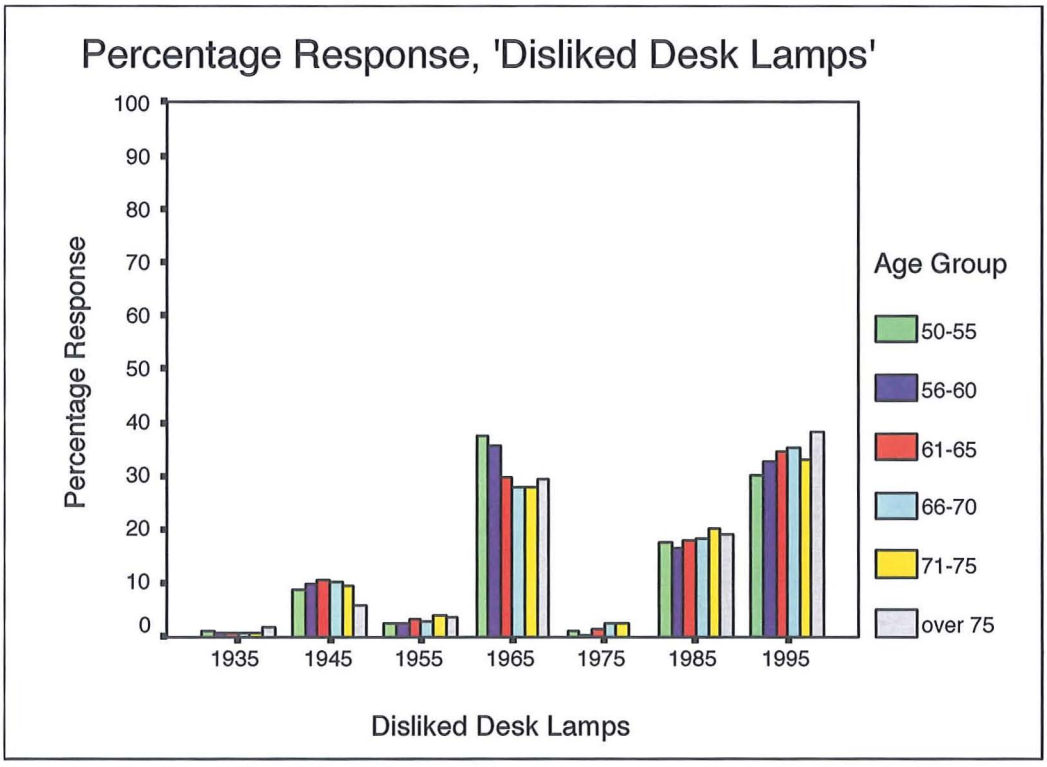


## Ap. Figure 27 - Analysis of disliked desk lamp

The analysis suggests no evidence of a relationship between age and product year (Phi = 0.1; p=0.78).

**age of respondent * disliked desk lamp Crosstabulation**

| | | | disliked desk lamp | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | |
| age of respondent | 50-55 | Count | 1 | 7 | 2 | 30 | 1 | 14 | 24 | 79 |
| | | % within age of respondent | 1.3% | 8.9% | 2.5% | 38.0% | 1.3% | 17.7% | 30.4% | 100.0% |
| | | Std. Residual | .4 | -.3 | -.4 | 1.3 | -.5 | -.3 | -.7 | |
| | 56-60 | Count | 2 | 22 | 6 | 80 | 1 | 37 | 73 | 221 |
| | | % within age of respondent | .9% | 10.0% | 2.7% | 36.2% | .5% | 16.7% | 33.0% | 100.0% |
| | | Std. Residual | .1 | .0 | -.5 | 1.7 | -1.7 | -.8 | -.4 | |
| | 61-65 | Count | 5 | 71 | 22 | 199 | 11 | 120 | 230 | 658 |
| | | % within age of respondent | .8% | 10.8% | 3.3% | 30.2% | 1.7% | 18.2% | 35.0% | 100.0% |
| | | Std. Residual | -.3 | .7 | .0 | .2 | -.7 | -.5 | .1 | |
| | 66-70 | Count | 7 | 83 | 23 | 229 | 20 | 152 | 289 | 803 |
| | | % within age of respondent | .9% | 10.3% | 2.9% | 28.5% | 2.5% | 18.9% | 36.0% | 100.0% |
| | | Std. Residual | .0 | .3 | -.7 | -.7 | .8 | -.1 | .6 | |
| | 71-75 | Count | 6 | 76 | 31 | 224 | 22 | 163 | 267 | 789 |
| | | % within age of respondent | .8% | 9.6% | 3.9% | 28.4% | 2.8% | 20.7% | 33.8% | 100.0% |
| | | Std. Residual | -.3 | -.3 | .9 | -.8 | 1.4 | 1.0 | -.5 | |
| | over 75 | Count | 2 | 6 | 4 | 31 | 0 | 20 | 40 | 103 |
| | | % within age of respondent | 1.9% | 5.8% | 3.9% | 30.1% | .0% | 19.4% | 38.8% | 100.0% |
| | | Std. Residual | 1.2 | -1.3 | .3 | .0 | -1.5 | .1 | .7 | |
| Total | | Count | 23 | 265 | 88 | 793 | 55 | 506 | 923 | 2653 |
| | | % within age of respondent | .9% | 10.0% | 3.3% | 29.9% | 2.1% | 19.1% | 34.8% | 100.0% |

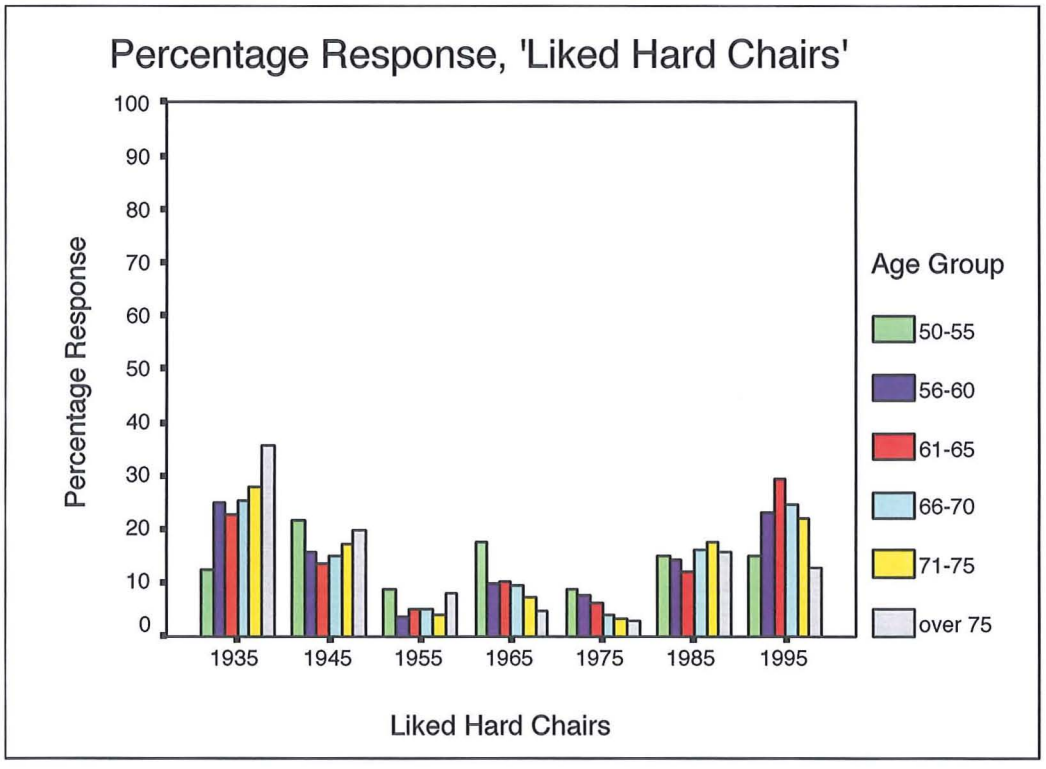


## Ap. Figure 28 - Analysis of liked hard chair

Phi was 0.17 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data indicates a complex relationship between the variables. Older respondents show a preference for the older products. However, the preferences of the younger groups are much more variables, with no clear pattern emerging.

**age of respondent * liked hard chair Crosstabulation**

| | | | liked hard chair | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | |
| age of respondent | 50-55 | Count | 10 | 17 | 7 | 14 | 7 | 12 | 12 | 79 |
| | | % within age of respondent | 12.7% | 21.5% | 8.9% | 17.7% | 8.9% | 15.2% | 15.2% | 100.0% |
| | | Std. Residual | -2.3 | 1.3 | 1.6 | 2.5 | 1.6 | -.1 | -1.6 | |
| | 56-60 | Count | 55 | 35 | 8 | 22 | 17 | 31 | 51 | 219 |
| | | % within age of respondent | 25.1% | 16.0% | 3.7% | 10.0% | 7.8% | 14.2% | 23.3% | 100.0% |
| | | Std. Residual | -.1 | .1 | -.8 | .4 | 2.0 | -.5 | -.3 | |
| | 61-65 | Count | 149 | 88 | 34 | 68 | 42 | 79 | 193 | 653 |
| | | % within age of respondent | 22.8% | 13.5% | 5.2% | 10.4% | 6.4% | 12.1% | 29.6% | 100.0% |
| | | Std. Residual | -1.4 | -1.5 | .4 | .9 | 1.8 | -2.2 | 2.8 | |
| | 66-70 | Count | 203 | 119 | 40 | 77 | 32 | 130 | 195 | 796 |
| | | % within age of respondent | 25.5% | 14.9% | 5.0% | 9.7% | 4.0% | 16.3% | 24.5% | 100.0% |
| | | Std. Residual | .0 | -.6 | .2 | .4 | -1.1 | .6 | .1 | |
| | 71-75 | Count | 221 | 136 | 31 | 59 | 27 | 139 | 175 | 788 |
| | | % within age of respondent | 28.0% | 17.3% | 3.9% | 7.5% | 3.4% | 17.6% | 22.2% | 100.0% |
| | | Std. Residual | 1.4 | 1.1 | -1.2 | -1.7 | -1.8 | 1.6 | -1.2 | |
| | over 75 | Count | 36 | 20 | 8 | 5 | 3 | 16 | 13 | 101 |
| | | % within age of respondent | 35.6% | 19.8% | 7.9% | 5.0% | 3.0% | 15.8% | 12.9% | 100.0% |
| | | Std. Residual | 2.0 | 1.0 | 1.4 | -1.4 | -.9 | .1 | -2.3 | |
| Total | | Count | 674 | 415 | 128 | 245 | 128 | 407 | 639 | 2636 |
| | | % within age of respondent | 25.6% | 15.7% | 4.9% | 9.3% | 4.9% | 15.4% | 24.2% | 100.0% |

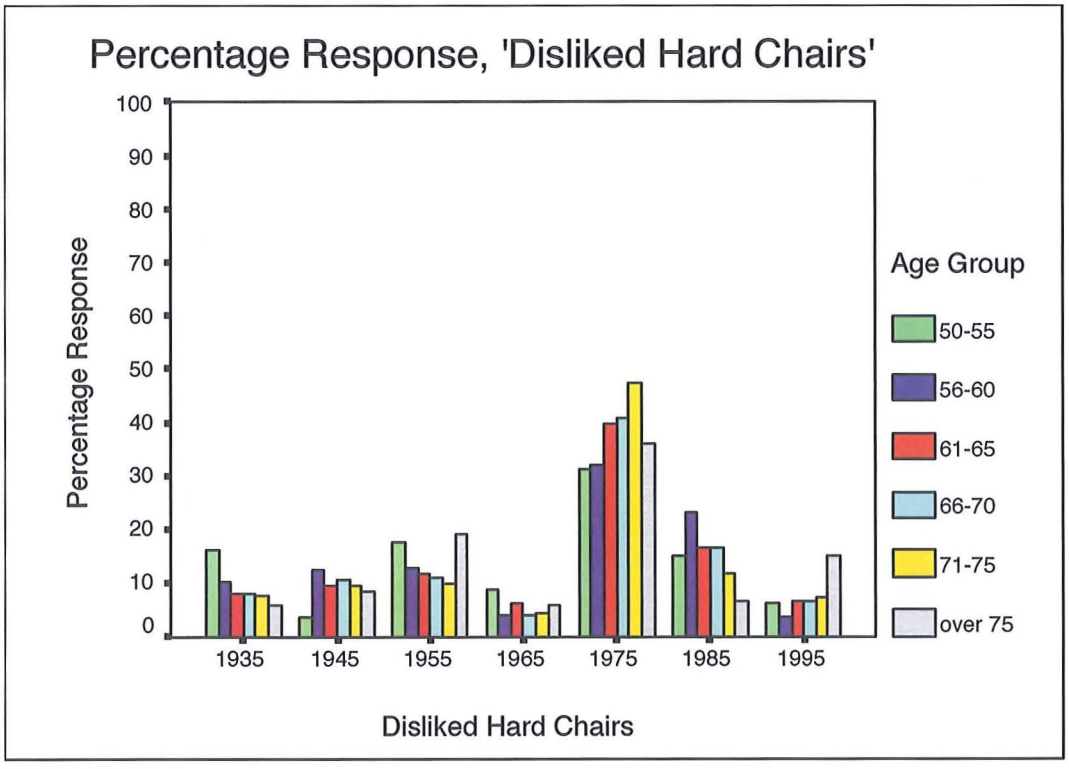


## Ap. Figure 29 - Analysis of disliked hard chair

Phi was 0.18 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data indicates that the 1975 product is the most likely to be selected as disliked; however, this tendency is less pronounced amongst the two youngest age groups.

**age of respondent * disliked hard chair Crosstabulation**

| | | | disliked hard chair | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 13 | 3 | 14 | 7 | 25 | 12 | 5 | 79 |
| | | % within age of respondent | 16.5% | 3.8% | 17.7% | 8.9% | 31.6% | 15.2% | 6.3% | 100.0% |
| | | Std. Residual | 2.4 | -1.8 | 1.5 | 1.6 | -1.4 | -.1 | -.2 | |
| | 56-60 | Count | 23 | 28 | 29 | 9 | 72 | 52 | 8 | 221 |
| | | % within age of respondent | 10.4% | 12.7% | 13.1% | 4.1% | 32.6% | 23.5% | 3.6% | 100.0% |
| | | Std. Residual | 1.0 | 1.2 | .6 | -.6 | -2.2 | 3.0 | -1.9 | |
| | 61-65 | Count | 54 | 64 | 79 | 41 | 266 | 110 | 43 | 657 |
| | | % within age of respondent | 8.2% | 9.7% | 12.0% | 6.2% | 40.5% | 16.7% | 6.5% | 100.0% |
| | | Std. Residual | -.3 | -.3 | .1 | 1.5 | -.6 | .8 | -.4 | |
| | 66-70 | Count | 67 | 86 | 91 | 34 | 333 | 137 | 54 | 802 |
| | | % within age of respondent | 8.4% | 10.7% | 11.3% | 4.2% | 41.5% | 17.1% | 6.7% | 100.0% |
| | | Std. Residual | -.2 | .6 | -.4 | -.9 | -.2 | 1.1 | -.3 | |
| | 71-75 | Count | 63 | 78 | 81 | 35 | 382 | 95 | 60 | 794 |
| | | % within age of respondent | 7.9% | 9.8% | 10.2% | 4.4% | 48.1% | 12.0% | 7.6% | 100.0% |
| | | Std. Residual | -.6 | -.2 | -1.3 | -.7 | 2.6 | -2.6 | .6 | |
| | over 75 | Count | 6 | 9 | 20 | 6 | 38 | 7 | 16 | 102 |
| | | % within age of respondent | 5.9% | 8.8% | 19.6% | 5.9% | 37.3% | 6.9% | 15.7% | 100.0% |
| | | Std. Residual | -.9 | -.4 | 2.3 | .4 | -.7 | -2.2 | 3.3 | |
| Total | | Count | 226 | 268 | 314 | 132 | 1116 | 413 | 186 | 2655 |
| | | % within age of respondent | 8.5% | 10.1% | 11.8% | 5.0% | 42.0% | 15.6% | 7.0% | 100.0% |

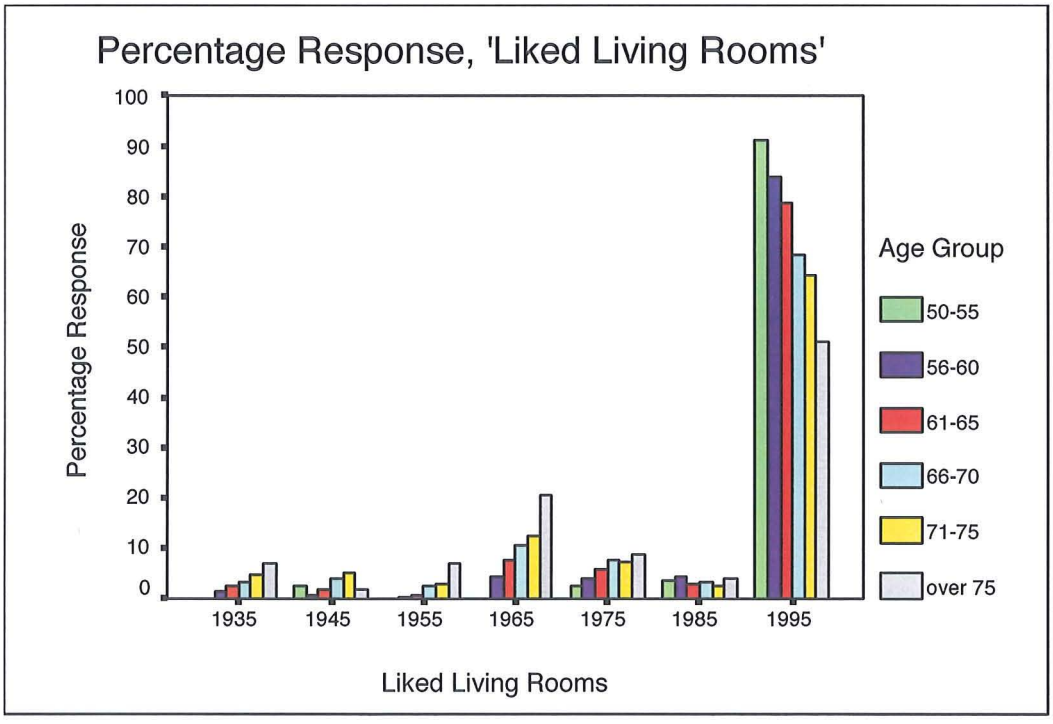


## Ap. Figure 30 - Analysis of liked living room

Phi was 0.22 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data shows clearly that the 1995 product is preferred by the majority of respondents. However, the table also indicates a relationship between this preference and age group such that older respondents are less likely to select the 1995 product than the younger ones: the percentage reduces from 91% for the 50-55 group to 51% for the over 75 group.

**age of respondent * liked living room Crosstabulation**

| | | | liked living room | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Total |
| age of respondent | 50-55 | Count | 0 | 2 | 0 | 0 | 2 | 3 | 73 | 80 |
| | | % within age of respondent | .0% | 2.5% | .0% | .0% | 2.5% | 3.8% | 91.3% | 100.0% |
| | | Std. Residual | -1.6 | -.4 | -1.3 | -2.8 | -1.5 | .3 | 2.2 | |
| | 56-60 | Count | 3 | 2 | 1 | 10 | 9 | 10 | 183 | 218 |
| | | % within age of respondent | 1.4% | .9% | .5% | 4.6% | 4.1% | 4.6% | 83.9% | 100.0% |
| | | Std. Residual | -1.6 | -2.0 | -1.7 | -2.6 | -1.5 | 1.2 | 2.3 | |
| | 61-65 | Count | 16 | 11 | 5 | 50 | 39 | 19 | 515 | 655 |
| | | % within age of respondent | 2.4% | 1.7% | .8% | 7.6% | 6.0% | 2.9% | 78.6% | 100.0% |
| | | Std. Residual | -1.3 | -2.4 | -2.5 | -2.0 | -.9 | -.4 | 2.3 | |
| | 66-70 | Count | 25 | 33 | 21 | 86 | 62 | 26 | 544 | 797 |
| | | % within age of respondent | 3.1% | 4.1% | 2.6% | 10.8% | 7.8% | 3.3% | 68.3% | 100.0% |
| | | Std. Residual | -.3 | 1.1 | .8 | .6 | 1.0 | .2 | -.9 | |
| | 71-75 | Count | 37 | 40 | 24 | 99 | 59 | 21 | 503 | 783 |
| | | % within age of respondent | 4.7% | 5.1% | 3.1% | 12.6% | 7.5% | 2.7% | 64.2% | 100.0% |
| | | Std. Residual | 2.1 | 2.6 | 1.6 | 2.2 | .8 | -.7 | -2.2 | |
| | over 75 | Count | 7 | 2 | 7 | 21 | 9 | 4 | 52 | 102 |
| | | % within age of respondent | 6.9% | 2.0% | 6.9% | 20.6% | 8.8% | 3.9% | 51.0% | 100.0% |
| | | Std. Residual | 1.9 | -.8 | 3.2 | 3.3 | .8 | .4 | -2.4 | |
| Total | | Count | 88 | 90 | 58 | 266 | 180 | 83 | 1870 | 2635 |
| | | % within age of respondent | 3.3% | 3.4% | 2.2% | 10.1% | 6.8% | 3.1% | 71.0% | 100.0% |

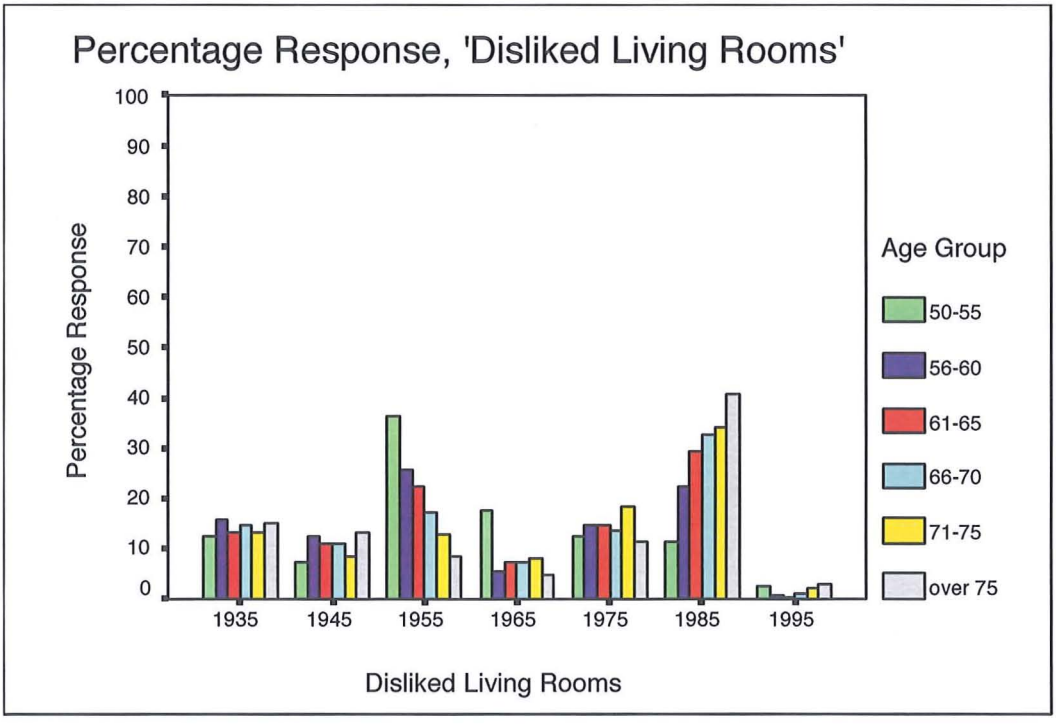


## Ap. Figure 31 - Analysis of disliked living room

Phi was 0.20 ($p<0.001$) for the relationship between age and product year. This suggests a small statistically significant relationship between the two variables. The data shows inverse relationships between age and the 1955 and the 1985 products. As age increases, the percentage of respondents choosing the 1985 product also increases whereas they decrease for the 1955 product. These results suggest some evidence that older respondents are more likely to dislike newer products than younger respondents.

**age of respondent * disliked living room Crosstabulation**

| | | | disliked living room | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | |
| age of respondent | 50-55 | Count | 10 | 6 | 29 | 14 | 10 | 9 | 2 | 80 |
| | | % within age of respondent | 12.5% | 7.5% | 36.3% | 17.5% | 12.5% | 11.3% | 2.5% | 100.0% |
| | | Std. Residual | -.4 | -.9 | 3.6 | 3.1 | -.7 | -3.3 | .9 | |
| | 56-60 | Count | 35 | 28 | 58 | 12 | 33 | 50 | 2 | 218 |
| | | % within age of respondent | 16.1% | 12.8% | 26.6% | 5.5% | 15.1% | 22.9% | .9% | 100.0% |
| | | Std. Residual | .7 | 1.0 | 2.7 | -1.2 | -.2 | -2.3 | -.6 | |
| | 61-65 | Count | 88 | 74 | 151 | 48 | 99 | 196 | 3 | 659 |
| | | % within age of respondent | 13.4% | 11.2% | 22.9% | 7.3% | 15.0% | 29.7% | .5% | 100.0% |
| | | Std. Residual | -.6 | .5 | 2.5 | -.4 | -.4 | -.9 | -2.0 | |
| | 66-70 | Count | 119 | 90 | 143 | 61 | 111 | 269 | 8 | 801 |
| | | % within age of respondent | 14.9% | 11.2% | 17.9% | 7.6% | 13.9% | 33.6% | 1.0% | 100.0% |
| | | Std. Residual | .5 | .5 | -.5 | -.1 | -1.2 | .9 | -.9 | |
| | 71-75 | Count | 107 | 69 | 104 | 64 | 147 | 274 | 18 | 783 |
| | | % within age of respondent | 13.7% | 8.8% | 13.3% | 8.2% | 18.8% | 35.0% | 2.3% | 100.0% |
| | | Std. Residual | -.4 | -1.6 | -3.5 | .5 | 2.3 | 1.6 | 2.2 | |
| | over 75 | Count | 16 | 14 | 9 | 5 | 12 | 43 | 3 | 102 |
| | | % within age of respondent | 15.7% | 13.7% | 8.8% | 4.9% | 11.8% | 42.2% | 2.9% | 100.0% |
| | | Std. Residual | .4 | 1.0 | -2.3 | -1.0 | -1.0 | 1.9 | 1.4 | |
| Total | | Count | 375 | 281 | 494 | 204 | 412 | 841 | 36 | 2643 |
| | | % within age of respondent | 14.2% | 10.6% | 18.7% | 7.7% | 15.6% | 31.8% | 1.4% | 100.0% |



In the following Ap. figures 32 to 43, information was summarised from the age categories in the tabulated data in Ap. figures 4 to 31, to identify the association between age and preference located against design decades for each product category.

**Ap. Figure 32 and 33: Preference based on Age Categories**

**PERCENTAGE RESPONSES, AGE 50 – 55**

**MOST LIKED**

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 7.5 | 8.8 | 22.5 | 1.3 | 2.5 | 43.8 | 13.8 |
| Soft Chairs | 2.6 | 15.8 | 23.7 | 14.5 | 3.9 | 19.7 | 19.7 |
| Soft Lighting | 12.7 | 5.1 | 0.0 | 5.1 | 31.6 | 12.7 | 32.9 |
| Telephones | 7.5 | 7.5 | 0.0 | 12.5 | 23.8 | 5.0 | 48.3 |
| Kettles | 7.6 | 7.6 | 6.3 | 20.3 | 11.4 | 20.3 | 26.6 |
| Bathrooms | 5.0 | 7.5 | 15.0 | 13.8 | 1.3 | 27.5 | 30.0 |
| Watches | 11.4 | 12.7 | 19.0 | 7.6 | 2.5 | 31.6 | 15.2 |
| Ceramics | 20.3 | 10.1 | 3.8 | 2.5 | 19.0 | 8.9 | 35.4 |
| Radios | 22.5 | 7.5 | 7.5 | 12.5 | 2.5 | 41.3 | 6.3 |
| Bedrooms | 7.5 | 1.3 | 3.8 | 5.0 | 0.0 | 67.5 | 15.0 |
| Glass | 7.6 | 10.1 | 0.0 | 12.7 | 7.6 | 26.6 | 35.4 |
| Desk Lamp | 34.2 | 12.7 | 10.1 | 6.3 | 20.3 | 1.3 | 15.2 |
| Hard Chairs | 12.7 | 21.5 | 8.9 | 17.7 | 8.9 | 15.2 | 15.2 |
| Living Rooms | 0.0 | 2.5 | 0.0 | 0.0 | 2.5 | 3.8 | 91.3 |
| Total | 159.1 | 130.7 | 120.6 | 131.8 | 137.8 | 325.2 | 400.3 |
| Percentage | 11.4% | 9.3% | 8.6% | 9.4% | 9.8% | 23.2% | 28.6% |

**MOST DISLIKED**

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 3.8 | 5.0 | 0.0 | 36.3 | 50.0 | 0.0 | 5.0 |
| Soft Chairs | 37.5 | 8.8 | 1.3 | 12.5 | 30.0 | 7.5 | 2.5 |
| Soft Lighting | 15.0 | 21.3 | 40.0 | 8.8 | 5.0 | 8.8 | 1.3 |
| Telephones | 20.3 | 27.8 | 2.5 | 24.1 | 6.3 | 13.9 | 5.1 |
| Kettles | 32.5 | 18.8 | 23.8 | 2.5 | 16.3 | 3.8 | 2.5 |
| Bathrooms | 8.8 | 7.5 | 2.5 | 16.3 | 60.0 | 3.8 | 1.3 |
| Watches | 6.3 | 1.3 | 2.5 | 5.0 | 63.8 | 15.0 | 6.3 |
| Ceramics | 16.3 | 10.0 | 30.0 | 23.8 | 10.0 | 5.0 | 5.0 |
| Radios | 13.8 | 8.8 | 13.8 | 3.8 | 17.5 | 3.8 | 38.8 |
| Bedrooms | 2.5 | 35.0 | 41.3 | 1.3 | 11.3 | 2.5 | 6.3 |
| Glass | 16.5 | 25.3 | 16.5 | 6.3 | 27.8 | 1.3 | 6.3 |
| Desk Lamp | 1.3 | 8.9 | 2.5 | 38.0 | 1.3 | 17.7 | 30.4 |
| Hard Chairs | 16.5 | 3.8 | 17.7 | 8.9 | 31.6 | 15.2 | 6.3 |
| Living Rooms | 12.5 | 7.5 | 36.3 | 17.5 | 12.5 | 11.3 | 2.5 |
| Total | 203.6 | 189.8 | 230.7 | 205.1 | 343.4 | 109.6 | 119.6 |
| Percentage | 14.5% | 13.5% | 16.5% | 14.6% | 24.5% | 7.8% | 8.4% |

## Ap. Figure 34 and 35: Preference based on Age Categories

## PERCENTAGE RESPONSES, AGE 56 - 60

## MOST LIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 13.5 | 14.3 | 25.1 | 0.0 | 2.2 | 37.2 | 7.6 |
| Soft Chairs | 5.1 | 16.8 | 33.2 | 18.2 | 3.7 | 12.1 | 10.7 |
| Soft Lighting | 9.5 | 6.4 | 0.0 | 5.9 | 41.4 | 15.9 | 20.9 |
| Telephones | 7.7 | 1.8 | 5.9 | 14.9 | 27.6 | 5.4 | 36.7 |
| Kettles | 3.6 | 10.4 | 0.9 | 17.6 | 7.2 | 29.9 | 30.3 |
| Bathrooms | 8.1 | 8.6 | 9.0 | 16.3 | 2.3 | 32.1 | 23.5 |
| Watches | 19.5 | 18.2 | 20.9 | 8.2 | 2.3 | 20.0 | 10.9 |
| Ceramics | 18.9 | 5.9 | 2.7 | 8.1 | 25.2 | 10.4 | 28.8 |
| Radios | 14.9 | 6.8 | 6.8 | 20.7 | 7.7 | 33.8 | 9.5 |
| Bedrooms | 5.5 | 0.9 | 1.4 | 12.0 | 0.9 | 67.3 | 12.0 |
| Glass | 5.9 | 15.0 | 0,5 | 11.8 | 3.6 | 9.1 | 54.1 |
| Desk Lamp | 41.9 | 11.3 | 13.1 | 5.9 | 13.5 | 6.3 | 8.1 |
| Hard Chairs | 25.1 | 16.0 | 3.7 | 10.0 | 7.8 | 14.2 | 23.3 |
| Living Rooms | 1.4 | 0.9 | 0.5 | 4.6 | 4.1 | 4.6 | 83.9 |
| Total | 180.6 | 133.3 | 123.7 | 154.2 | 149.5 | 298.3 | 360.3 |
| Percentage | 12.9% | 9.5% | 8.8% | 11.0% | 10.7% | 21.3% | 25.7% |

## MOST DISLIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 1.3 | 2.2 | 0.0 | 46.6 | 41.3 | 0.0 | 8.5 |
| Soft Chairs | 33.8 | 7.8 | 2.7 | 5.5 | 41.1 | 5.0 | 4.1 |
| Soft Lighting | 17.0 | 9.9 | 50.7 | 8.1 | 4.0 | 6.7 | 3.6 |
| Telephones | 30.5 | 26.4 | 7.7 | 20.9 | 6.8 | 5.9 | 1.8 |
| Kettles | 36.2 | 19.0 | 21.3 | 1.4 | 15.5 | 4.5 | 2.3 |
| Bathrooms | 12.7 | 9.5 | 6.8 | 20.4 | 43.0 | 4.5 | 3.2 |
| Watches | 0.9 | 2.3 | 1.8 | 6.4 | 68.9 | 12.3 | 7.3 |
| Ceramics | 13.6 | 12.2 | 35.3 | 23.1 | 6.8 | 6.3 | 2.7 |
| Radios | 18.0 | 9.5 | 9.9 | 6.8 | 7.2 | 1.4 | 47.3 |
| Bedrooms | 3.6 | 32.3 | 40.9 | 2.7 | 15.5 | 0.9 | 4.1 |
| Glass | 15.5 | 20.1 | 25.6 | 5.5 | 23.3 | 9.1 | 0.9 |
| Desk Lamp | 0.9 | 10.0 | 2.7 | 36.2 | 0.5 | 16.7 | 33.0 |
| Hard Chairs | 10.5 | 12.7 | 13.1 | 4.1 | 32.6 | 23.5 | 3.6 |
| Living Rooms | 16.1 | 12.8 | 26.6 | 5.5 | 15.1 | 22.9 | 0.9 |
| Total | 210.5 | 186.7 | 245.1 | 193.2 | 321.5 | 119.7 | 123.3 |
| Percentage | 15.0% | 13.3% | 17.5% | 13.8% | 23.0% | 8.5% | 8.8% |

## Ap. Figure 36 and 37: Preference based on Age Categories

## PERCENTAGE RESPONSES, AGE 61 - 65

## MOST LIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 13.5 | 13.7 | 28.1 | 2.1 | 2.4 | 35.3 | 5.0 |
| Soft Chairs | 5.5 | 19.7 | 44.5 | 12.7 | 3.0 | 6.3 | 8.4 |
| Soft Lighting | 9.5 | 5.6 | 0.2 | 6.3 | 41.8 | 15.2 | 21.5 |
| Telephones | 5.0 | 1.7 | 5.3 | 14.3 | 20.8 | 10.3 | 42.7 |
| Kettles | 5.3 | 9.6 | 2.1 | 15.9 | 6.0 | 31.4 | 29.6 |
| Bathrooms | 5.1 | 13.6 | 11.6 | 16.3 | 2.6 | 27.2 | 23.6 |
| Watches | 15.6 | 21.6 | 26.3 | 6.5 | 5.1 | 14.5 | 10.4 |
| Ceramics | 18.9 | 10.6 | 2.4 | 6.5 | 22.3 | 12.4 | 26.8 |
| Radios | 5.7 | 6.6 | 6.8 | 21.8 | 13.9 | 39.3 | 5.9 |
| Bedrooms | 8.0 | 2.1 | 1.8 | 14.8 | 3.1 | 57.8 | 12.4 |
| Glass | 5.4 | 16.5 | 1.8 | 13.0 | 3.3 | 12.4 | 47.6 |
| Desk Lamp | 42.4 | 11.6 | 12.5 | 5.5 | 13.8 | 7.6 | 6.6 |
| Hard Chairs | 22.8 | 13.5 | 5.2 | 10.4 | 6.4 | 12.1 | 29.6 |
| Living Rooms | 2.4 | 1.7 | 0.8 | 7.6 | 6.0 | 2.9 | 78.6 |
| Total | 165.1 | 148.1 | 149.4 | 153.7 | 150.5 | 284.7 | 348.7 |
| Percentage | 11.8% | 10.6% | 10.7% | 11.0% | 10.7% | 20.3% | 25.0% |

## MOST DISLIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 1.2 | 3.6 | 0.6 | 43.1 | 42.2 | 1.5 | 7.8 |
| Soft Chairs | 27.9 | 7.7 | 2.3 | 5.0 | 42.0 | 10.8 | 4.4 |
| Soft Lighting | 14.5 | 12.8 | 47.9 | 7.2 | 3.8 | 11.3 | 2.6 |
| Telephones | 24.8 | 36.3 | 5.1 | 20.4 | 6.8 | 5.0 | 1.5 |
| Kettles | 40.5 | 13.5 | 19.4 | 3.8 | 14.4 | 4.7 | 3.8 |
| Bathrooms | 11.1 | 7.2 | 6.0 | 26.5 | 40.1 | 6.0 | 3.0 |
| Watches | 3.8 | 1.1 | 1.7 | 5.5 | 61.7 | 20.4 | 5.6 |
| Ceramics | 17.9 | 11.7 | 34.0 | 20.2 | 7.4 | 4.6 | 4.1 |
| Radios | 19.9 | 6.6 | 10.4 | 1.7 | 5.1 | 2.7 | 53.3 |
| Bedrooms | 4.2 | 33.5 | 37.3 | 2.0 | 15.6 | 1.4 | 5.7 |
| Glass | 15.3 | 19.2 | 18.7 | 6.2 | 29.3 | 9.1 | 2.3 |
| Desk Lamp | 0.8 | 10.8 | 3.3 | 30.2 | 0.7 | 18.2 | 35.0 |
| Hard Chairs | 8.2 | 9.7 | 12.0 | 6.2 | 40.5 | 16.7 | 6.5 |
| Living Rooms | 13.4 | 11.2 | 22.9 | 7.3 | 15.0 | 29.7 | 0.5 |
| Total | 203.5 | 184.9 | 221.6 | 185.3 | 325.9 | 142.5 | 136.3 |
| Percentage | 14.5% | 13.2% | 15.8% | 13.2% | 23.3% | 10.2% | 9.7% |

## Ap. Figure 38 and 39: Preference based on Age Categories

## PERCENTAGE RESPONSES, AGE 66 - 70

## MOST LIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 12.9 | 15.9 | 28.2 | 3.3 | 2.3 | 32.6 | 4.7 |
| Soft Chairs | 5.7 | 25.0 | 47.9 | 4.6 | 1.8 | 5.2 | 8.0 |
| Soft Lighting | 6.0 | 7.9 | 1.1 | 10.0 | 39.2 | 17.7 | 18.0 |
| Telephones | 4.0 | 0.9 | 4.5 | 13.0 | 24.0 | 12.6 | 41.0 |
| Kettles | 3.8 | 8.8 | 1.6 | 15.6 | 5.2 | 37.5 | 27.5 |
| Bathrooms | 7.1 | 16.6 | 12.4 | 15.5 | 3.1 | 23.2 | 22.3 |
| Watches | 14.5 | 20.7 | 27.3 | 9.4 | 3.4 | 12.3 | 12.3 |
| Ceramics | 18.5 | 10.7 | 2.6 | 9.1 | 23.2 | 11.6 | 24.3 |
| Radios | 4.4 | 4.6 | 5.9 | 27.0 | 17.4 | 36.0 | 4.7 |
| Bedrooms | 9.8 | 3.7 | 3.2 | 17.6 | 2.1 | 49.3 | 14.3 |
| Glass | 8.0 | 16.2 | 2.3 | 13.1 | 3.1 | 9.7 | 47.6 |
| Desk Lamp | 43.3 | 13.3 | 10.9 | 5.3 | 16.1 | 5.5 | 5.6 |
| Hard Chairs | 25.5 | 14.9 | 5.0 | 9.7 | 4.0 | 16.3 | 24.5 |
| Living Rooms | 3.1 | 4.1 | 2.6 | 10.8 | 7.8 | 3.3 | 68.3 |
| Total | 166.6 | 163.3 | 155.5 | 165.7 | 152.7 | 272.8 | 323.1 |
| Percentage | 11.9% | 11.7% | 11.1% | 11.8% | 10.9% | 19.5% | 23.0% |

## MOST DISLIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 2.6 | 2.9 | 0.2 | 43.7 | 40.5 | 0.6 | 9.4 |
| Soft Chairs | 23.4 | 4.2 | 1.6 | 7.4 | 47.6 | 10.8 | 4.8 |
| Soft Lighting | 17.4 | 12.3 | 45.1 | 5.3 | 5.6 | 10.3 | 3.9 |
| Telephones | 28.0 | 37.4 | 3.6 | 20.1 | 5.1 | 3.5 | 2.5 |
| Kettles | 39.6 | 10.3 | 24.7 | 3.1 | 15.6 | 3.8 | 2.9 |
| Bathrooms | 11.2 | 11.1 | 4.6 | 31.3 | 33.0 | 5.8 | 3.0 |
| Watches | 4.2 | 1.4 | 1.4 | 4.1 | 61.2 | 22.2 | 5.7 |
| Ceramics | 20.9 | 8.8 | 30.7 | 18.2 | 7.7 | 6.2 | 7.4 |
| Radios | 23.8 | 5.1 | 7.9 | 2.2 | 2.1 | 2.0 | 57.0 |
| Bedrooms | 5.2 | 32.7 | 33.3 | 2.5 | 18.0 | 2.9 | 5.5 |
| Glass | 12.8 | 19.6 | 13.2 | 7.2 | 36.8 | 8.6 | 1.4 |
| Desk Lamp | 0.9 | 10.3 | 2.9 | 28.5 | 2.5 | 18.9 | 36.0 |
| Hard Chairs | 8.4 | 10.7 | 10.3 | 4.2 | 41.5 | 17.1 | 6.7 |
| Living Rooms | 14.9 | 11.2 | 17.9 | 7.6 | 13.9 | 33.6 | 1.0 |
| Total | 213.3 | 178.0 | 198.4 | 185.9 | 331.1 | 146.3 | 147.2 |
| Percentage | 15.2% | 12.7% | 14.2% | 13.3% | 23.6% | 10.5% | 10.5% |

## Ap. Figure 40 and 41: Preference based on Age Categories

## PERCENTAGE RESPONSES, AGE 71 - 75

## MOST LIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 12.6 | 18.0 | 25.0 | 1.6 | 2.1 | 35.9 | 4.7 |
| Soft Chairs | 7.3 | 34.2 | 40.7 | 6.1 | 1.3 | 5.2 | 5.3 |
| Soft Lighting | 6.6 | 10.4 | 1.9 | 9.0 | 34.7 | 21.8 | 15.6 |
| Telephones | 2.9 | 1.5 | 5.0 | 15.3 | 25.8 | 16.5 | 33.0 |
| Kettles | 2.5 | 9.6 | 2.1 | 12.5 | 6.2 | 43.3 | 23.8 |
| Bathrooms | 6.4 | 19.3 | 19.1 | 12.9 | 2.8 | 22.8 | 16.8 |
| Watches | 14.0 | 22.1 | 24.3 | 10.0 | 3.2 | 8.8 | 17.7 |
| Ceramics | 19.2 | 11.7 | 4.8 | 10.1 | 20.3 | 11.0 | 22.9 |
| Radios | 3.7 | 5.9 | 6.7 | 32.4 | 20.3 | 28.5 | 2.6 |
| Bedrooms | 14.8 | 3.8 | 5.2 | 20.9 | 1.8 | 40.4 | 13.1 |
| Glass | 9.4 | 16.6 | 2.0 | 12.8 | 2.4 | 10.6 | 46.2 |
| Desk Lamp | 49.9 | 12.1 | 9.7 | 4.4 | 15.6 | 4.5 | 3.8 |
| Hard Chairs | 28.0 | 17.3 | 3.9 | 7.5 | 3.4 | 17.6 | 22.2 |
| Living Rooms | 4.7 | 5.1 | 3.1 | 12.6 | 7.5 | 2.7 | 64.2 |
| Total | 182.0 | 187.6 | 153.5 | 168.1 | 147.4 | 269.6 | 291.9 |
| Percentage | 13.0% | 13.4% | 11.0% | 12.0% | 10.5% | 19.2% | 20.8% |

## MOST DISLIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 1.4 | 1.6 | 0.6 | 44.4 | 41.2 | 1.5 | 9.2 |
| Soft Chairs | 19.4 | 3.0 | 0.9 | 6.4 | 54.7 | 11.3 | 4.3 |
| Soft Lighting | 17.7 | 11.9 | 40.0 | 8.6 | 5.6 | 11.2 | 5.0 |
| Telephones | 27.1 | 40.5 | 3.7 | 18.7 | 5.2 | 2.8 | 2.1 |
| Kettles | 40.3 | 10.4 | 23.1 | 3.9 | 14.9 | 3.3 | 4.1 |
| Bathrooms | 10.6 | 7.9 | 5.2 | 38.6 | 26.3 | 6.6 | 4.7 |
| Watches | 3.5 | 1.0 | 1.1 | 3.9 | 59.0 | 24.8 | 6.6 |
| Ceramics | 17.9 | 8.8 | 25.0 | 21.7 | 10.5 | 8.4 | 7.7 |
| Radios | 24.9 | 4.5 | 5.3 | 1.9 | 1.8 | 1.6 | 60.0 |
| Bedrooms | 3.2 | 31.2 | 30.8 | 1.8 | 20.1 | 4.2 | 8.7 |
| Glass | 9.2 | 19.9 | 11.6 | 11.1 | 38.4 | 8.4 | 1.5 |
| Desk Lamp | 0.8 | 9.6 | 3.9 | 28.4 | 2.8 | 20.7 | 33.8 |
| Hard Chairs | 7.9 | 9.8 | 10.2 | 4.4 | 48.1 | 12.0 | 7.6 |
| Living Rooms | 13.7 | 8.8 | 13.3 | 8.2 | 18.8 | 35.0 | 2.3 |
| Total | 197.6 | 168.9 | 174.7 | 202.0 | 347.4 | 151.8 | 157.5 |
| Percentage | 14.1% | 12.0% | 12.5% | 14.4% | 24.8% | 10.8% | 11.2% |

## Ap. Figure 42 and 43: Preference based on Age Categories

## PERCENTAGE RESPONSES, AGE OVER 75

## MOST LIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 11.5 | 22.1 | 29.8 | 3.8 | 1.0 | 30.8 | 1.0 |
| Soft Chairs | 11.5 | 42.3 | 29.8 | 5.8 | 1.0 | 3.8 | 5.8 |
| Soft Lighting | 6.8 | 18.4 | 2.9 | 11.5 | 27.2 | 24.3 | 8.7 |
| Telephones | 1.9 | 1.0 | 2.9 | 14.4 | 31.7 | 13.5 | 34.6 |
| Kettles | 3.8 | 7.6 | 2.9 | 9.5 | 5.7 | 45.7 | 24.8 |
| Bathrooms | 9.9 | 18.9 | 23.8 | 7.9 | 6.9 | 21.8 | 10.8 |
| Watches | 13.5 | 26.0 | 23.1 | 11.5 | 1.9 | 2.9 | 21.2 |
| Ceramics | 28.4 | 11.8 | 3.9 | 14.7 | 15.7 | 10.8 | 14.7 |
| Radios | 2.9 | 4.8 | 5.8 | 36.5 | 23.1 | 26.0 | 1.0 |
| Bedrooms | 22.3 | 18.7 | 2.9 | 18.4 | 1.9 | 35.9 | 9.7 |
| Glass | 13.5 | 8.7 | 4.8 | 12.5 | 0.0 | 4.8 | 55.8 |
| Desk Lamp | 51.5 | 10.7 | 8.7 | 3.9 | 20.4 | 2.9 | 1.9 |
| Hard Chairs | 35.6 | 19.8 | 7.9 | 5.0 | 3.0 | 15.8 | 12.9 |
| Living Rooms | 6.9 | 2.0 | 6.9 | 20.6 | 8.8 | 3.9 | 51.0 |
| Total | 220.0 | 202.7 | 156.1 | 176.2 | 148.3 | 242.9 | 254.0 |
| Percentage | 15.7% | 14.5% | 11.1% | 12.6% | 10.6% | 17.4% | 18.0% |

## MOST DISLIKED

| | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 1.0 | 0.0 | 0.0 | 44.7 | 44.7 | 1.0 | 8.7 |
| Soft Chairs | 10.6 | 2.9 | 3.8 | 7.7 | 61.5 | 9.6 | 3.8 |
| Soft Lighting | 14.4 | 11.5 | 43.3 | 4.8 | 10.6 | 7.7 | 7.7 |
| Telephones | 34.0 | 31.1 | 5.8 | 21.4 | 1.9 | 1.9 | 3.9 |
| Kettles | 39.4 | 11.5 | 13.5 | 3.8 | 21.2 | 8.7 | 1.9 |
| Bathrooms | 6.9 | 7.8 | 2.9 | 48.0 | 26.5 | 4.9 | 2.9 |
| Watches | 2.9 | 1.0 | 0.0 | 1.9 | 59.6 | 30.8 | 3.8 |
| Ceramics | 26.2 | 4.9 | 15.5 | 23.3 | 14.6 | 6.8 | 8.7 |
| Radios | 28.2 | 5.8 | 2.9 | 1.0 | 1.9 | 2.9 | 57.3 |
| Bedrooms | 3.8 | 18.3 | 33.7 | 3.8 | 27.9 | 5.8 | 6.7 |
| Glass | 7.8 | 21.4 | 9.4 | 12.6 | 36.9 | 11.7 | 0.0 |
| Desk Lamp | 1.9 | 5.8 | 3.9 | 30.1 | 0.0 | 19.4 | 38.8 |
| Hard Chairs | 5.9 | 8.8 | 19.6 | 5.9 | 37.3 | 6.9 | 15.7 |
| Living Rooms | 15.7 | 13.7 | 8.8 | 4.9 | 11.8 | 42.2 | 2.9 |
| Total | 198.7 | 144.5 | 163.4 | 213.9 | 356.4 | 160.3 | 162.8 |
| Percentage | 14.2% | 10.3% | 11.7% | 15.2% | 25.5% | 11.5% | 11.6% |

Ap. figures 44 and 45 summarised the data from the last row of information from Ap. figure 32 to 43, the percentage preference across all products for each design decade and each age category. A visual summary of this data is included in the text (Chapter 5, figures 33 and 35).

**Ap. Figure 44 and 45: Preference Based on All Products by Age Categories.**

**LIKED SELECTION**

| AGE | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Difference |
|---|---|---|---|---|---|---|---|---|
| 50 – 55 | 11.4 | 9.3 | 8.6 | 9.4 | 9.8 | 23.2 | 28.6 | 20.0 |
| 56 – 60 | 12.9 | 9.5 | 8.8 | 11.0 | 10.7 | 21.3 | 25.7 | 16.9 |
| 61 – 65 | 11.8 | 10.6 | 10.7 | 11.0 | 10.7 | 20.3 | 25.0 | 14.4 |
| 66 – 70 | 11.9 | 11.7 | 11.1 | 11.8 | 10.9 | 19.5 | 23.0 | 12.1 |
| 71 – 75 | 13.0 | 13.4 | 11.0 | 12.0 | 10.5 | 19.2 | 20.8 | 10.3 |
| 75 + | 15.7 | 14.5 | 11.1 | 12.6 | 10.6 | 17.4 | 18.0 | 7.4 |
| Total | 76.7 | 69.0 | 61.3 | 67.8 | 63.2 | 120.9 | 141.1 | |
| % Preference Div. X 6 Age Groups | 12.8% | 11.5% | 10.2% | 11.3% | 10.5% | 20.1% | 23.5% | |
| Deviation from the Mean | -1.5 | -2.8 | -4.1 | -3.0 | -3.8 | +5.8 | +9.2 | |
| Selection | 3rd | | | | | 2nd | 1st | |

**DISLIKED SELECTION**

| AGE | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 | Difference |
|---|---|---|---|---|---|---|---|---|
| 50 – 55 | 14.5 | 13.5 | 16.5 | 14.6 | 24.5 | 7.8 | 8.4 | 16.7 |
| 56 – 60 | 15.0 | 13.3 | 17.5 | 13.8 | 23.0 | 8.5 | 8.8 | 14.5 |
| 61 – 65 | 14.5 | 13.2 | 15.8 | 13.2 | 23.2 | 10.2 | 9.7 | 13.5 |
| 66 – 70 | 15.2 | 12.7 | 14.2 | 13.3 | 23.6 | 10.5 | 10.5 | 13.1 |
| 71 – 75 | 14.5 | 12.0 | 12.5 | 14.4 | 24.8 | 10.8 | 11.2 | 14.0 |
| 75 + | 14.2 | 10.3 | 11.7 | 15.2 | 25.5 | 11.5 | 11.6 | 15.2 |
| Total | 87.5 | 75.0 | 88.2 | 84.5 | 144.6 | 59.3 | 60.2 | |
| % Preference Div. X 6 Age Groups | 14.6% | 12.5% | 14.7% | 14.1% | 24.1% | 9.9% | 10.0% | |
| Deviation from the Mean | +0.3 | -1.8 | +0.4 | -0.2 | +9.8 | -4.4 | -4.3 | |
| Selection | 3rd | | 2nd | | 1st | | | |

In Ap. figures 44 and 45 design decades were indicated in the first row and age categories in the first column. The total percentage preference, for each design decade and for all products was in the eighth row and the mean percentage preference in the ninth row.

The last column indicates the difference between the average preference for each age category. In the 'liked' selection (Ap. figure 44) the size of the difference decreased as the respondents aged, perhaps suggesting stronger degrees of preference amongst the younger age categories. In the 'disliked' selection (Ap. figure 45) the degree of difference between the age categories was less marked in size and pattern. The analysis illustrated the findings of the statistical analysis, where the correlation between age and preference was most marked within the 'liked' selection.

If the selection of preference had been completely random it might have been anticipated that each design decade and each age category might theoretically have had an even distribution of preference selection. One hundred percent selection, divided by seven design decades would represent a mean of 14.3% per decade. The tenth row indicated the degree of variation, either plus or minus, from the mean. The further from the anticipated mean would indicate a greater degree of significance. However, the figures did not represent a simple progression but rather were clustered around 1995 and 1985 for the 'liked' selection and 1975 for the 'disliked' selection. The first, second and third largest selections were indicated in the eleventh row.

As the relationship between age and preference was not particularly strong but the clustering around design decades was, the data was re-examined to investigate this association. The average preference, for all ages, was calculated for each product against each design decade. Ap. figures 46 and 47 summarised information taken from the last row of the tabulated data in Ap. figures 4 to 31. This data is summarised visually within the text in Chapter 5, figures 34 and 36.

**Ap. figure 46 and 47:**

**Preference Based on All Products and All Ages by Design Decades.**

**LIKED SELECTION**

| Products | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 12.8 | 15.9 | 26.8 | 2.2 | 2.2 | 34.9 | 5.1 |
| Soft Chairs | 6.2 | 26.2 | 42.3 | 9.0 | 2.1 | 6.4 | 7.7 |
| Soft Lighting | 7.6 | 8.3 | 1.1 | 8.4 | 38.0 | 18.2 | 18.5 |
| Telephones | 4.3 | 1.5 | 4.8 | 14.2 | 24.3 | 12.4 | 38.5 |
| Kettles | 3.9 | 9.3 | 2.0 | 14.8 | 6.0 | 36.9 | 27.0 |
| Bathrooms | 6.5 | 15.8 | 14.4 | 14.6 | 2.9 | 24.9 | 20.9 |
| Watches | 14.9 | 21.1 | 25.2 | 8.8 | 3.6 | 12.7 | 13.7 |
| Ceramics | 19.3 | 10.6 | 3.3 | 8.7 | 21.9 | 11.4 | 24.8 |
| Radios | 5.9 | 5.8 | 6.5 | 26.7 | 16.3 | 34.2 | 4.7 |
| Bedrooms | 10.9 | 3.3 | 3.3 | 17.1 | 2.1 | 50.2 | 13.1 |
| Glass | 7.8 | 15.8 | 2.0 | 12.8 | 3.0 | 10.9 | 47.7 |
| Desk Lamp | 44.9 | 12.2 | 11.0 | 5.1 | 15.5 | 5.6 | 5.7 |
| Hard Chairs | 25.6 | 15.7 | 4.9 | 9.3 | 4.9 | 15.4 | 24.2 |
| Living Rooms | 3.3 | 3.4 | 2.2 | 10.1 | 6.8 | 3.1 | 71.0 |
| Total | 173.9 | 164.9 | 149.8 | 161.8 | 149.6 | 277.2 | 322.6 |
| Div.X 14 Prods. | | | | | | | |
| Average % | 12.4% | 11.7% | 10.7% | 11.5% | 10.7% | 19.8% | 23.0% |
| Selection | 3rd | | | | | 2nd | 1st |
| Cumulative % | 55.2% | | | | | 42.8% | 23.0% |

**DISLIKED SELECTION**

| Products | 1935 | 1945 | 1955 | 1965 | 1975 | 1985 | 1995 |
|---|---|---|---|---|---|---|---|
| Teapots | 1.8 | 2.6 | 0.4 | 43.8 | 41.6 | 1.0 | 8.7 |
| Soft Chairs | 24.1 | 5.1 | 1.7 | 6.5 | 47.8 | 10.3 | 4.4 |
| Soft Lighting | 16.5 | 12.3 | 44.6 | 7.1 | 5.2 | 10.3 | 3.9 |
| Telephones | 27.1 | 36.6 | 4.4 | 20.0 | 5.6 | 4.1 | 2.2 |
| Kettles | 39.6 | 12.2 | 22.1 | 3.4 | 15.3 | 4.1 | 3.4 |
| Bathrooms | 10.9 | 8.8 | 5.2 | 31.5 | 34.2 | 5.9 | 3.5 |
| Watches | 3.6 | 1.2 | 1.4 | 4.5 | 61.3 | 21.9 | 6.0 |
| Ceramics | 18.7 | 9.7 | 29.6 | 20.5 | 8.7 | 6.4 | 6.3 |
| Radios | 22.5 | 5.8 | 7.9 | 2.4 | 3.7 | 2.1 | 55.6 |
| Bedrooms | 4.1 | 31.9 | 34.5 | 2.2 | 18.0 | 2.8 | 6.5 |
| Glass | 12.5 | 19.9 | 15.1 | 8.3 | 34.0 | 8.6 | 1.7 |
| Desk Lamp | 0.9 | 10.0 | 3.3 | 29.9 | 2.1 | 19.1 | 34.8 |
| Hard Chairs | 8.5 | 10.1 | 11.8 | 5.0 | 42.0 | 15.6 | 7.0 |
| Living Rooms | 14.2 | 10.6 | 18.7 | 7.7 | 15.6 | 31.8 | 1.4 |
| Total | 205.0 | 176.8 | 200.7 | 192.8 | 335.1 | 144.0 | 145.4 |
| Div.X 14 Prods. | | | | | | | |
| Average % | 14.6% | 12.6% | 14.3% | 13.8% | 23.9% | 10.3% | 10.4% |
| Selection | 2nd | | 3rd | | 1st | | |
| Cumulative % | 38.5% | | 52.8% | | 23.9% | | |

Data for each product type against design decade in Ap. figures 46 and 47 indicated the majority of preference was focused around the first three selections. Data for these three selections were then summarised in Ap. figures 48 and 49 and visually as graphs within the text in Chapter 5, figures 37 and 38.

**Ap. figure 48 and 49: Preference based on individual products; First, Second and Third Preference Selections.**

**LIKED SELECTION**

| | 1st Selection | Design Decade | 2nd Selection | Design Decade | 3rd Selection | Design Decade |
|---|---|---|---|---|---|---|
| Teapots | 34.2 | 1985 | 26.8 | 1955 | 15.9 | 1945 |
| Soft Chairs | 42.3 | 1955 | 26.2 | 1945 | 9.0 | 1965 |
| Soft Lighting | 38.0 | 1975 | 18.5 | 1995 | 18.2 | 1985 |
| Telephones | 38.5 | 1995 | 24.5 | 1975 | 14.2 | 1965 |
| Kettles | 36.9 | 1985 | 27.0 | 1995 | 14.8 | 1965 |
| Bathrooms | 24.9 | 1985 | 20.9 | 1995 | 15.8 | 1945 |
| Watches | 25.2 | 1955 | 21.1 | 1945 | 14.9 | 1935 |
| Ceramics | 24.8 | 1995 | 21.9 | 1975 | 19.3 | 1935 |
| Radios | 34.2 | 1985 | 26.7 | 1965 | 16.3 | 1975 |
| Bedrooms | 50.2 | 1985 | 17.1 | 1965 | 13.1 | 1995 |
| Glass | 47.7 | 1995 | 15.8 | 1945 | 12.8 | 1965 |
| Desk Lamp | 44.9 | 1935 | 15.5 | 1975 | 12.2 | 1945 |
| Hard Chairs | 25.6 | 1935 | 24.2 | 1995 | 15.7 | 1945 |
| Living Rooms | 71.0 | 1995 | 10.1 | 1965 | 6.8 | 1975 |
| Total | 539.1 | | 296.1 | | 199.0 | |
| Div.X 14 Prods. | | | | | | |
| Average % | 38.5% | | 21.1% | | 14.2% | |
| Cumulative % | 38.5% | | 59.6% | | 73.8% | |

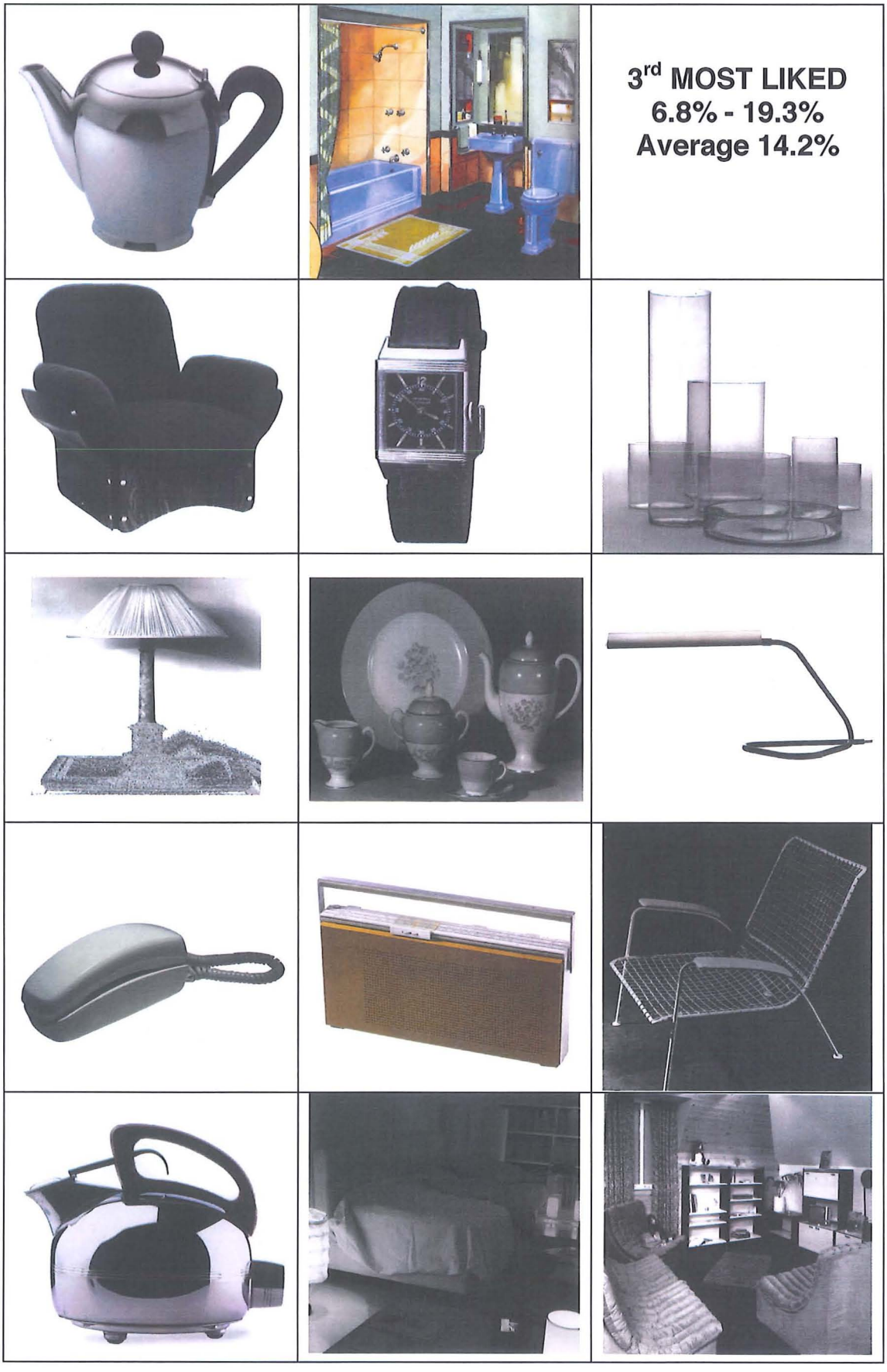
**DISLIKED SELECTION**

| | 1st Selection | Design Decade | 2nd Selection | Design Decade | 3rd Selection | Design Decade |
|---|---|---|---|---|---|---|
| Teapots | 43.8 | 1965 | 41.6 | 1975 | 8.7 | 1995 |
| Soft Chairs | 47.8 | 1975 | 24.1 | 1935 | 10.3 | 1985 |
| Soft Lighting | 44.6 | 1955 | 16.5 | 1935 | 12.3 | 1945 |
| Telephones | 36.6 | 1945 | 27.1 | 1935 | 20.0 | 1965 |
| Kettles | 39.6 | 1935 | 22.1 | 1955 | 15.3 | 1975 |
| Bathrooms | 34.2 | 1975 | 31.5 | 1965 | 10.9 | 1935 |
| Watches | 61.3 | 1975 | 21.9 | 1985 | 6.0 | 1995 |
| Ceramics | 29.6 | 1955 | 20.6 | 1965 | 18.7 | 1935 |
| Radios | 55.6 | 1995 | 22.5 | 1935 | 7.9 | 1955 |
| Bedrooms | 34.5 | 1955 | 31.9 | 1945 | 18.0 | 1975 |
| Glass | 34.0 | 1975 | 19.9 | 1945 | 15.1 | 1955 |
| Desk Lamp | 34.8 | 1995 | 29.9 | 1965 | 19.1 | 1985 |
| Hard Chairs | 42.0 | 1975 | 15.6 | 1985 | 11.8 | 1955 |
| Living Rooms | 31.8 | 1985 | 18.7 | 1955 | 15.6 | 1975 |
| Total | 570.2 | | 343.9 | | 189.7 | |
| Div.X 14 Prods. | | | | | | |
| Average % | 40.7% | | 24.6% | | 13.5% | |
| Cumulative % | 40.7% | | 65.3% | | 78.8% | |

This data was then considered against the associated visual images. In the text, the images are arranged as continuums of preference for each product category (Chapter 5, figures 39, 40, 41, 42, 43 and 44). Whilst here, in the appendix, the images are grouped: 1st, 2nd, 3rd 'most liked', 'neutral', 3rd, 2nd, 1st 'most disliked' preferences (Ap. figures 50, 51, 52, 53, 54, 55 and 56). 10 of the 14 products were evenly distributed around 7 points of preference, whilst 4: 'telephones', 'ceramics', 'glass' and 'living rooms' had images with both 'liked' and 'disliked' categories, leaving 2 images within the neutral mid area, which included 18 images (Ap. figure 53).

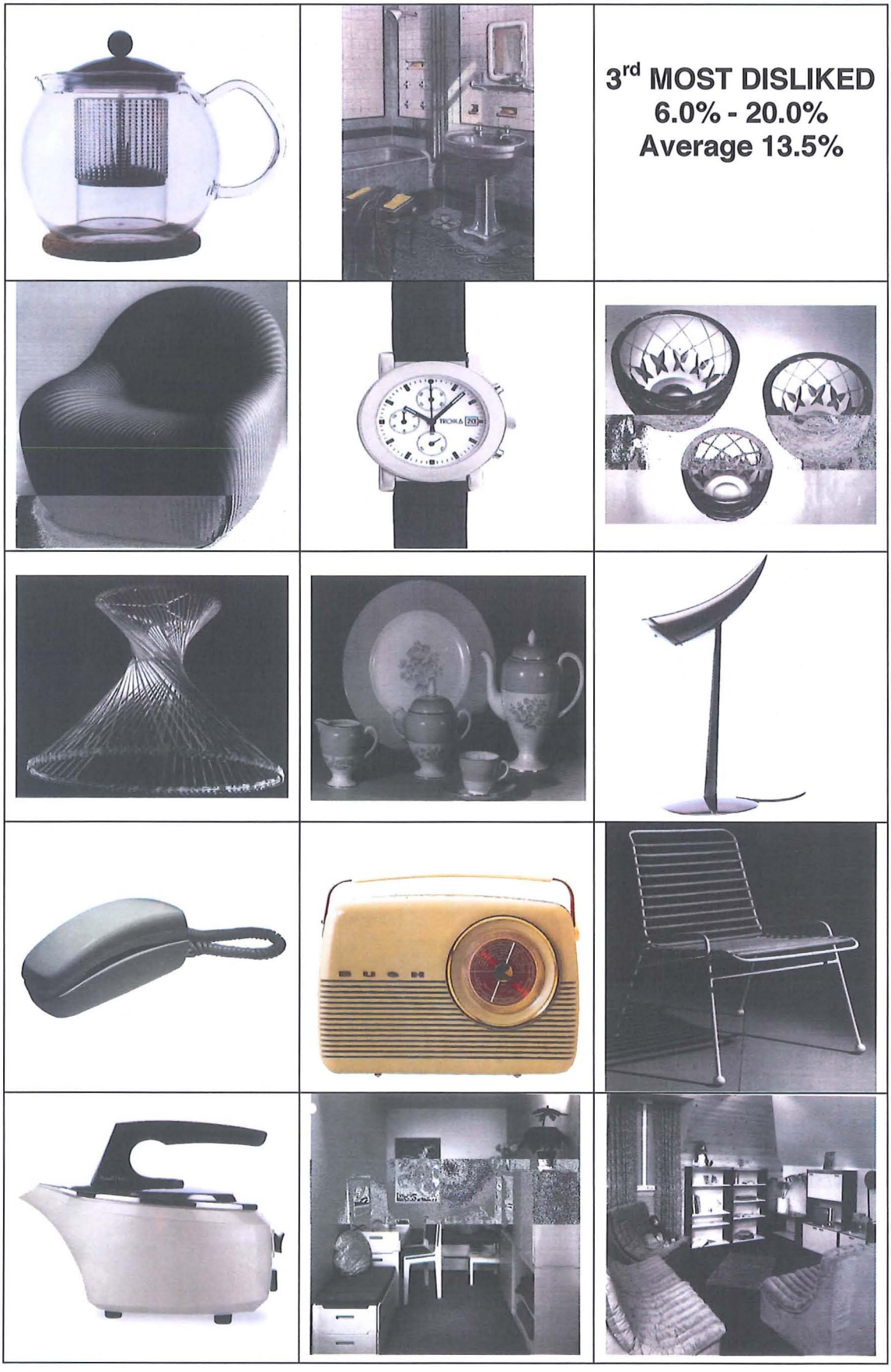

Ap. Figure 50: 1st Most 'Liked' Selection


Ap. Figure 51: 2nd Most 'Liked' Selection

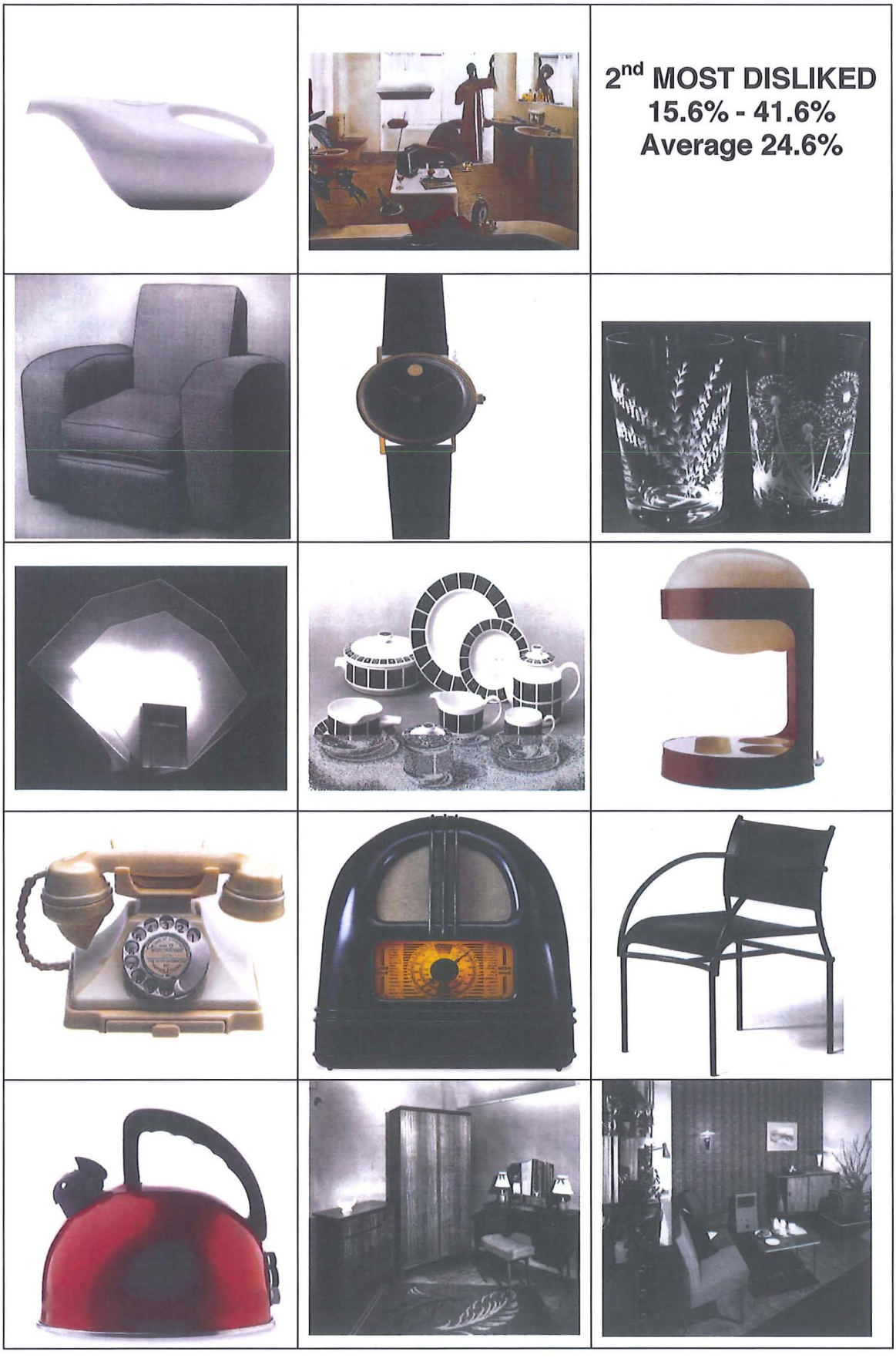



Ap. Figure 52: 3rd Most 'Liked' Selection

Ap. Figure 53: Neutral Mid Range




Ap. Figure 54: 3rd Most 'Disliked' Selection




Ap. Figure 55: 2nd Most 'Disliked' Selection


Ap. Figure 56: 1st Most 'Disliked' Selection

## APPENDIX 3:

## ANALYSIS OF SECTION 3 OF THE QUESTIONNAIRE - DESIGN VALUES

This appendix provides the detailed statistical analysis data, together with graphic illustrations, for Section 3 – Design Values within the questionnaire. The appendix is cross-referenced with the text to contextualise the data within the parameters of the study. Within the text the findings are summarised to allow rapid comparison between the 'Design Values' and discussion of the implications for the research (Chapter 5, figures 47, 48).

- **The effects of age and sex on factors:**

This final series of analyses investigated the effects of respondent's age and/or sex on the factors that influence purchase. Separate two-way analyses of variance (ANOVA) were performed on each of the nine factors, treating level of importance as an interval level dependent variable. For each anova there were two grouping variables: age with six levels and sex with two levels. Average importance level for each group is reported where a significant effect is found. Significant effects of age are also reported in terms of homogeneous groups. A homogeneous group comprises a number of age categories that do not seem to differ in their responses on a particular factor. Significant effects of sex are also presented as average importance ratings for males and females.

### The effects of age and sex on factor 1: modern non decorative look

There were no effect of age or sex of respondent on the level of importance given to factor 1 (Ap. Figure 57). Ap. Figure 57: Factor 1 Modern Non Decorative Look

**Tests of Between-Subjects Effects**

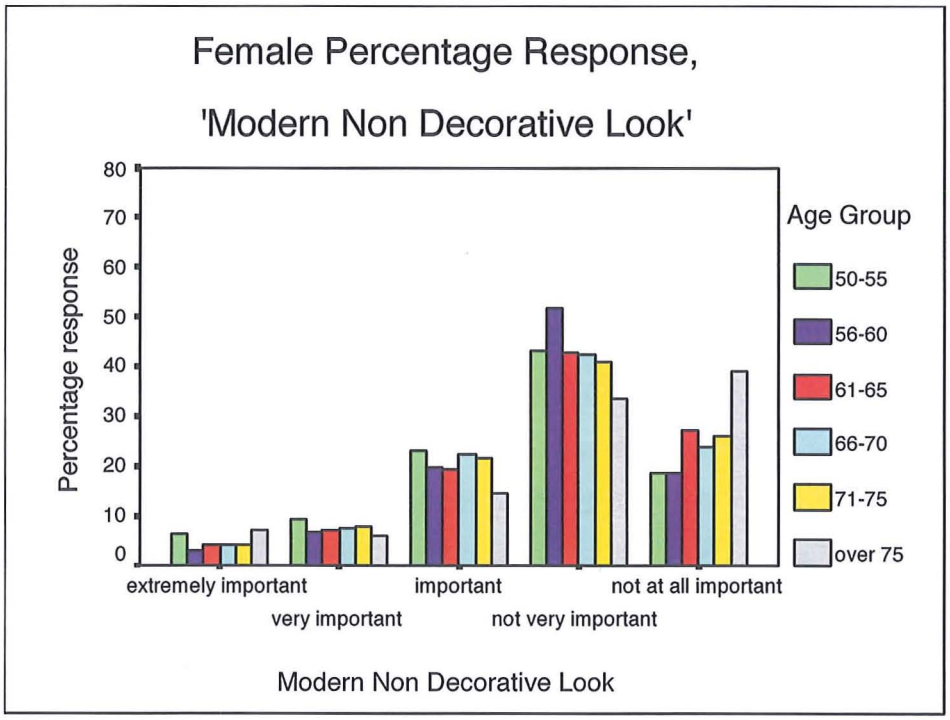
Dependent Variable: mod non-dec look

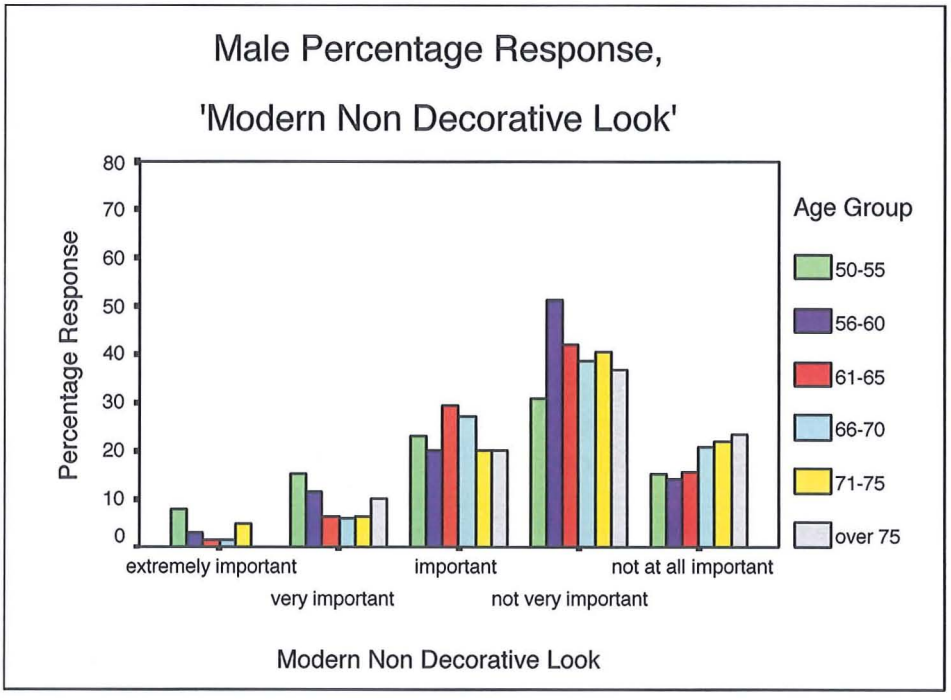
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 8.519[a] | 11 | .774 | .735 | .706 |
| Intercept | 9525.420 | 1 | 9525.420 | 9036.104 | .000 |
| AGE | 5.128 | 5 | 1.026 | .973 | .433 |
| GENDER | 1.706 | 1 | 1.706 | 1.619 | .203 |
| AGE * GENDER | 1.306 | 5 | .261 | .248 | .941 |
| Error | 2638.540 | 2503 | 1.054 | | |
| Total | 38313.000 | 2515 | | | |
| Corrected Total | 2647.059 | 2514 | | | |

a. R Squared = .003 (Adjusted R Squared = -.001)

Ap. Figure 58: Factor 1 - Modern Non-Decorative Look

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Extremely important | 95 | 3.5 | 3.8 | 3.8 |
| | very important | 184 | 6.8 | 7.3 | 11.0 |
| | important | 557 | 20.6 | 22.0 | 33.0 |
| | not very important | 1082 | 40.0 | 42.8 | 75.8 |
| | not at all important | 610 | 22.5 | 24.1 | 99.9 |
| | 8 | 2 | .1 | .1 | 100.0 |
| | Total | 2530 | 93.4 | 100.0 | |
| Missing | System | 178 | 6.6 | | |
| Total | | 2708 | 100.0 | | |



**The effects of age and sex on factor 2: traditional decorative look**

There were no effect of age or sex of respondent on the level of importance given to factor 2 (Ap. Figure 59).

Ap. Figure 59: Factor 2 – Traditional Decorative Look

**Tests of Between-Subjects Effects**

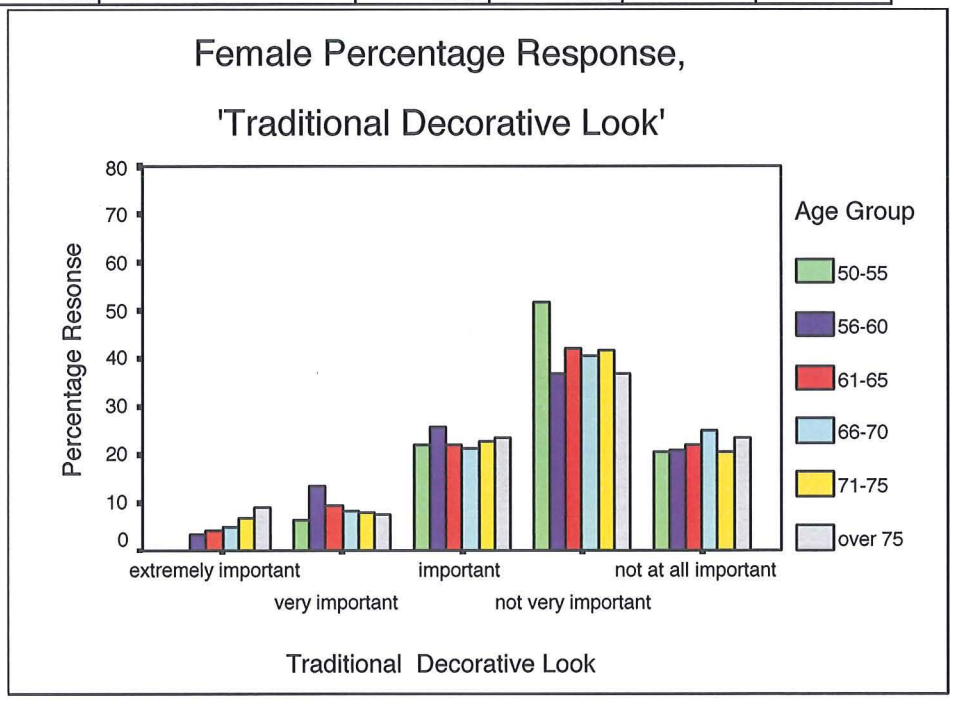
Dependent Variable: trad dec look

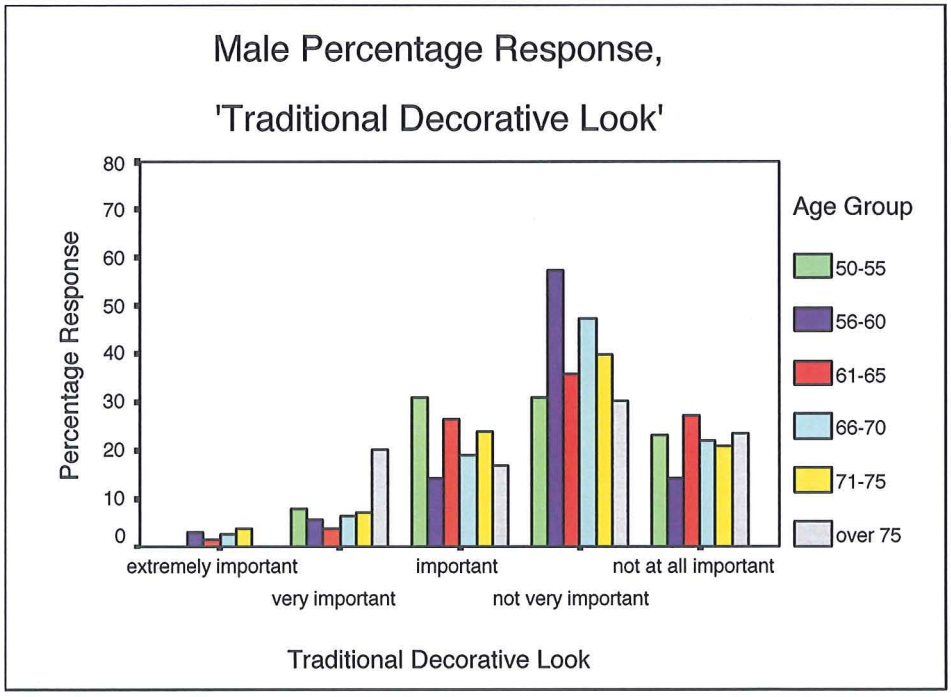
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 16.754[a] | 11 | 1.523 | 1.365 | .183 |
| Intercept | 9468.620 | 1 | 9468.620 | 8486.797 | .000 |
| AGE | 6.455 | 5 | 1.291 | 1.157 | .328 |
| GENDER | 1.316 | 1 | 1.316 | 1.179 | .278 |
| AGE * GENDER | 2.245 | 5 | .449 | .402 | .847 |
| Error | 2837.195 | 2543 | 1.116 | | |
| Total | 37843.000 | 2555 | | | |
| Corrected Total | 2853.949 | 2554 | | | |

a. R Squared = .006 (Adjusted R Squared = .002)

Ap. Figure 60: Factor 2 - Traditional Decorative Look

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | extremely important | 118 | 4.4 | 4.6 | 4.6 |
| | very important | 215 | 7.9 | 8.4 | 12.9 |
| | Important | 582 | 21.5 | 22.6 | 35.6 |
| | not very important | 1073 | 39.6 | 41.7 | 77.3 |
| | not at all important | 580 | 21.4 | 22.6 | 99.8 |
| | 6 | 1 | .0 | .0 | 99.9 |
| | 7 | 3 | .1 | .1 | 100.0 |
| | Total | 2572 | 95.0 | 100.0 | |
| Missing | System | 136 | 5.0 | | |
| Total | | 2708 | 100.0 | | |



**The effects of age and sex on factor 3: similar products at home**

For importance ratings of factor 3 there was an effect of age (F = 2.98, df = 5 and 2549, p=0.01) but no effect of sex of respondent nor an interaction between age and sex (Ap. Figure 61). Investigations of homogeneous age groupings suggest that younger respondents are more likely to consider this factor as more important than older respondents. However, the two homogeneous groups suggest that this is a marginal effect with a great deal of overlap between the six age groups.

Ap. Figure 61: Factor 3 – Similar to Products at Home

**Tests of Between-Subjects Effects**

Dependent Variable: sim product

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 31.627[a] | 11 | 2.875 | 2.399 | .006 |
| Intercept | 7842.630 | 1 | 7842.630 | 6544.619 | .000 |
| AGE | 17.881 | 5 | 3.576 | 2.984 | .011 |
| GENDER | .892 | 1 | .892 | .744 | .388 |
| AGE * GENDER | 8.924 | 5 | 1.785 | 1.489 | .190 |
| Error | 3054.550 | 2549 | 1.198 | | |
| Total | 32100.000 | 2561 | | | |
| Corrected Total | 3086.177 | 2560 | | | |

a. R Squared = .010 (Adjusted R Squared = .006)

**sim product**

Scheffe[a,b,c]

| age of respondent | N | Subset 1 | Subset 2 |
|---|---|---|---|
| 56-60 | 212 | 3.12 | |
| 50-55 | 78 | 3.21 | 3.21 |
| 61-65 | 637 | 3.33 | 3.33 |
| 66-70 | 780 | 3.40 | 3.40 |
| 71-75 | 755 | 3.42 | 3.42 |
| over 75 | 99 | | 3.54 |
| Sig. | | .195 | .128 |

Means for groups in homogeneous subsets are displayed.
Based on Type III Sum of Squares
The error term is Mean Square(Error) = 1.198.

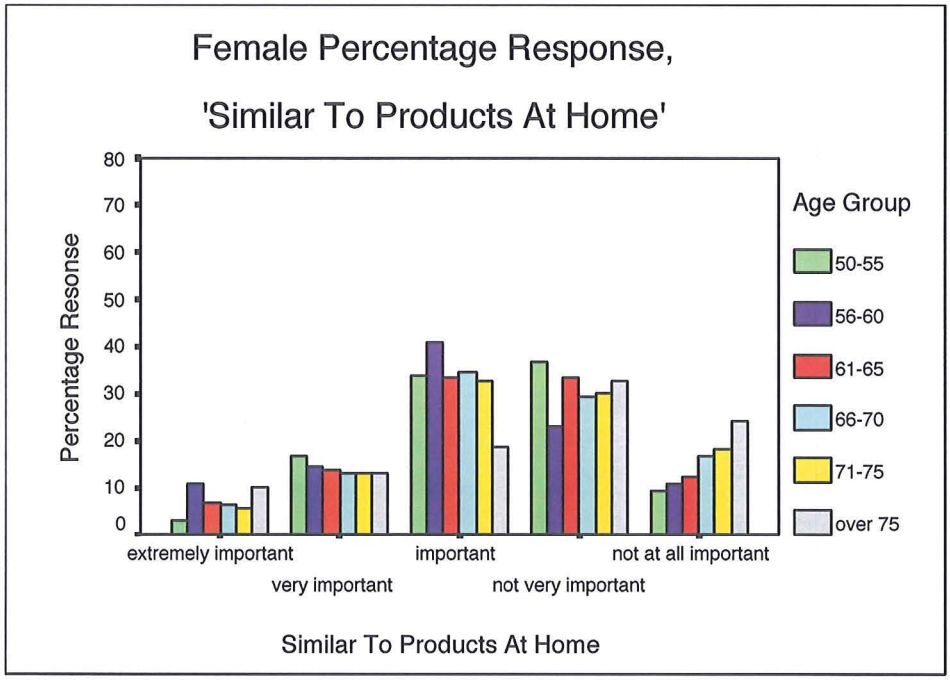
a. Uses Harmonic Mean Sample Size = 188.591.

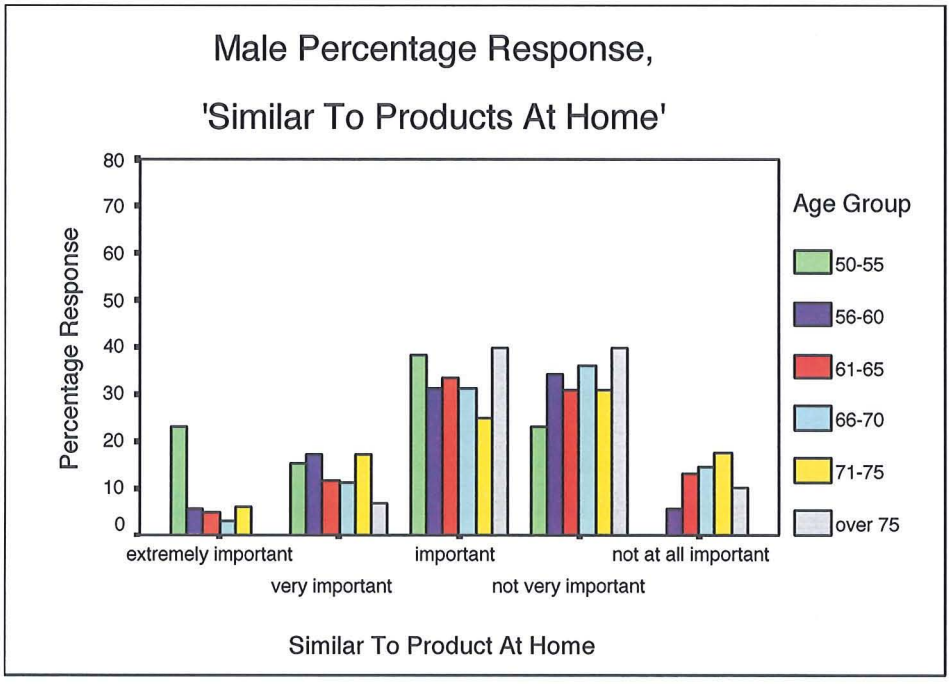
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Alpha = .05.

Ap. Figure 62: Factor 3 - Similar to Products at Home

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | extremely important | 160 | 5.9 | 6.2 | 6.2 |
| | very important | 350 | 12.9 | 13.6 | 19.8 |
| | Important | 859 | 31.7 | 33.3 | 53.1 |
| | not very important | 809 | 29.9 | 31.4 | 84.5 |
| | not at all important | 394 | 14.5 | 15.3 | 99.8 |
| | 6 | 2 | .1 | .1 | 99.9 |
| | 7 | 1 | .0 | .0 | 100.0 |
| | 9 | 1 | .0 | .0 | 100.0 |
| | Total | 2576 | 95.1 | 100.0 | |
| Missing | System | 132 | 4.9 | | |
| Total | | 2708 | 100.0 | | |



**The effects of age and sex on factor 4: reliability**

For importance ratings of factor 4 there was a statistically significant effect of age (F = 2.67, df = 5 and 2639, p = 0.02) but no effect of sex of respondent nor an interaction (Ap. Figure 63). Investigations of homogeneous age groupings suggest that this is a marginal effect with little additional evidence being provided for separate sub-groups with the different ages.

Ap. Figure 63: Factor 4 - Reliability

**Tests of Between-Subjects Effects**

Dependent Variable: reliability

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 9.439[a] | 11 | .858 | 1.557 | .105 |
| Intercept | 1644.400 | 1 | 1644.400 | 2983.866 | .000 |
| AGE | 7.343 | 5 | 1.469 | 2.665 | .021 |
| GENDER | 1.475 | 1 | 1.475 | 2.676 | .102 |
| AGE * GENDER | 4.863 | 5 | .973 | 1.765 | .117 |
| Error | 1454.345 | 2639 | .551 | | |
| Total | 6928.000 | 2651 | | | |
| Corrected Total | 1463.784 | 2650 | | | |

a. R Squared = .006 (Adjusted R Squared = .002)

reliability

Scheffe[a,b,c]

| age of respondent | N | Subset 1 |
|---|---|---|
| 56-60 | 221 | 1.40 |
| 66-70 | 804 | 1.42 |
| 61-65 | 660 | 1.42 |
| 71-75 | 786 | 1.45 |
| 50-55 | 79 | 1.57 |
| over 75 | 101 | 1.57 |
| Sig. | | .398 |

Means for groups in homogeneous subsets are displayed.
Based on Type III Sum of Squares
The error term is Mean Square(Error) = .551.

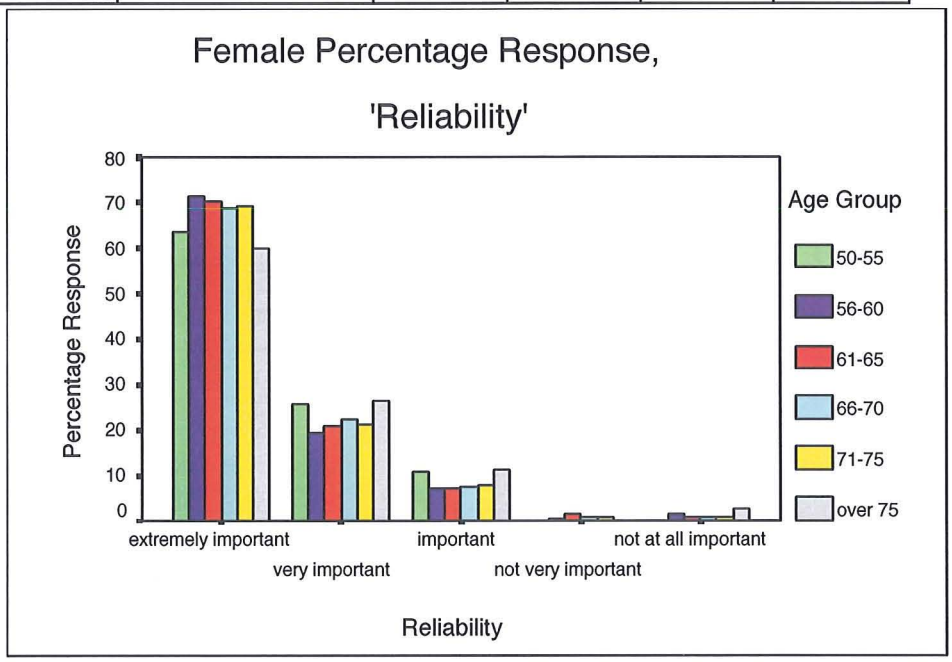
a. Uses Harmonic Mean Sample Size = 192.831.

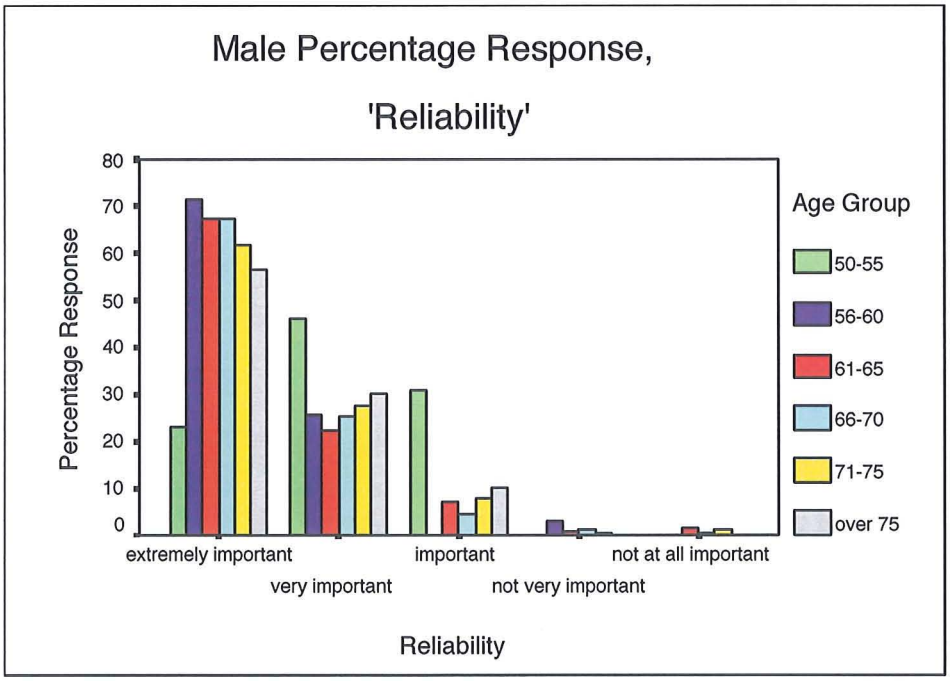
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Alpha = .05.

Ap. Figure 64: Factor 4 - Reliability

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | extremely important | 1818 | 67.1 | 68.1 | 68.1 |
| | very important | 603 | 22.3 | 22.6 | 90.7 |
| | important | 202 | 7.5 | 7.6 | 98.3 |
| | not very important | 22 | .8 | .8 | 99.1 |
| | not at all important | 23 | .8 | .9 | 100.0 |
| | 6 | 1 | .0 | .0 | 100.0 |
| | Total | 2669 | 98.6 | 100.0 | |
| Missing | System | 39 | 1.4 | | |
| Total | | 2708 | 100.0 | | |



**The effects of age and sex on factor 5: ease of use**

There were no statistically significant effects of age or sex of respondent on the level of importance given to factor 5 (Ap. Figure 65).

Ap. Figure 65: Factor 5 – Ease of Use

**Tests of Between-Subjects Effects**

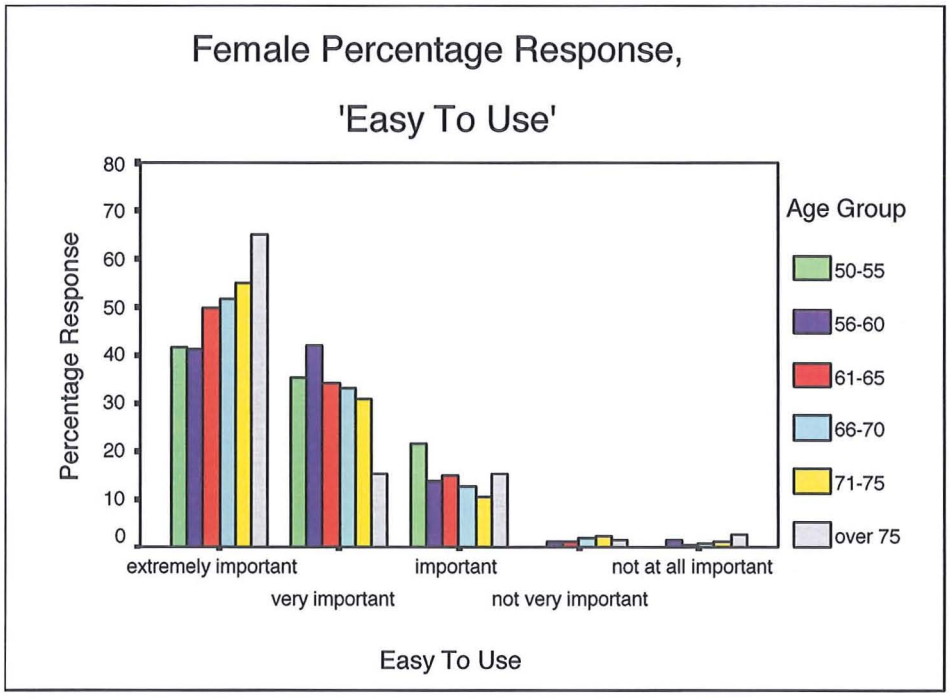
Dependent Variable: easy use

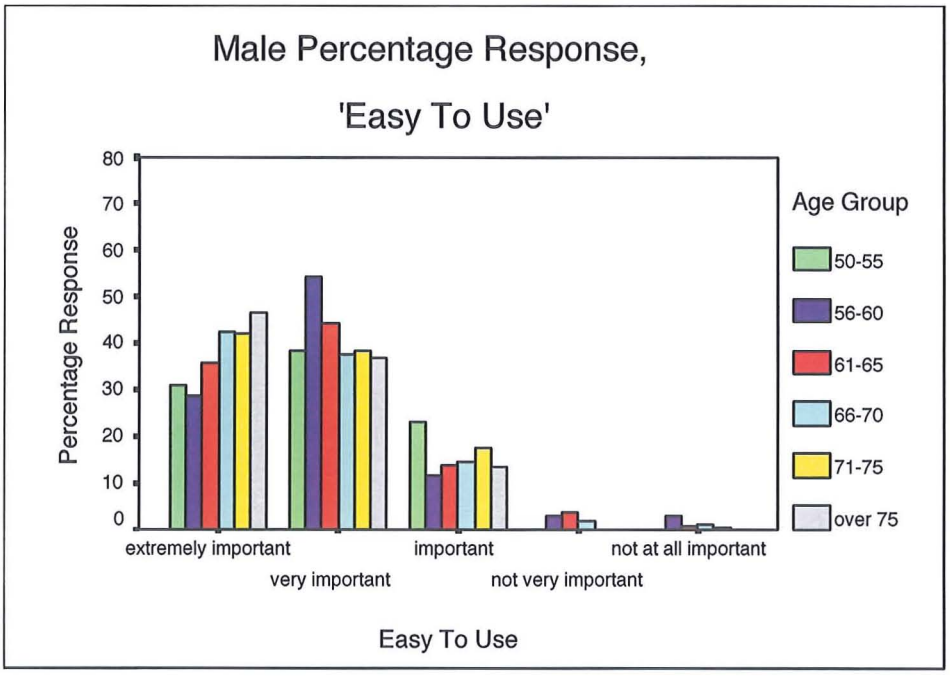
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 17.799[a] | 11 | 1.618 | 2.372 | .006 |
| Intercept | 2202.322 | 1 | 2202.322 | 3229.012 | .000 |
| AGE | 6.066 | 5 | 1.213 | 1.779 | .114 |
| GENDER | 2.544 | 1 | 2.544 | 3.730 | .054 |
| AGE * GENDER | .840 | 5 | .168 | .246 | .942 |
| Error | 1780.129 | 2610 | .682 | | |
| Total | 9415.000 | 2622 | | | |
| Corrected Total | 1797.929 | 2621 | | | |

a. R Squared = .010 (Adjusted R Squared = .006)

Ap. Figure 66: Factor 5 - Easy to Use

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Extremely important | 1293 | 47.7 | 49.0 | 49.0 |
| | very important | 918 | 33.9 | 34.8 | 83.8 |
| | Important | 361 | 13.3 | 13.7 | 97.5 |
| | not very important | 42 | 1.6 | 1.6 | 99.1 |
| | not at all important | 22 | .8 | .8 | 100.0 |
| | 7 | 1 | .0 | .0 | 100.0 |
| | Total | 2637 | 97.4 | 100.0 | |
| Missing | System | 71 | 2.6 | | |
| Total | | 2708 | 100.0 | | |



**The effects of age and sex on factor 6: environmentally friendly**

The analysis of factor 6 indicates a highly significant effect of sex of respondent ($F = 19$, $df = 1$ and $2542$, $p < 0.001$) but no evidence of an effect of age of respondent nor an interaction between sex and age (Ap. Figure 67). Ap. Figure 67 also presents the mean scores for male and female respondents. These suggest that, compared to male respondents, females consider environmental issues to be more important (average importance rating for females = 2.5; average importance rating for males = 2.9).

Ap. Figure 67: Factor 6 – Environmentally Friendly

**Tests of Between-Subjects Effects**

Dependent Variable: environ friendly

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 77.029[a] | 11 | 7.003 | 6.062 | .000 |
| Intercept | 5071.595 | 1 | 5071.595 | 4390.413 | .000 |
| AGE | 4.640 | 5 | .928 | .803 | .547 |
| GENDER | 22.414 | 1 | 22.414 | 19.403 | .000 |
| AGE * GENDER | 6.423 | 5 | 1.285 | 1.112 | .352 |
| Error | 2936.397 | 2542 | 1.155 | | |
| Total | 20157.000 | 2554 | | | |
| Corrected Total | 3013.426 | 2553 | | | |

a. R Squared = .026 (Adjusted R Squared = .021)

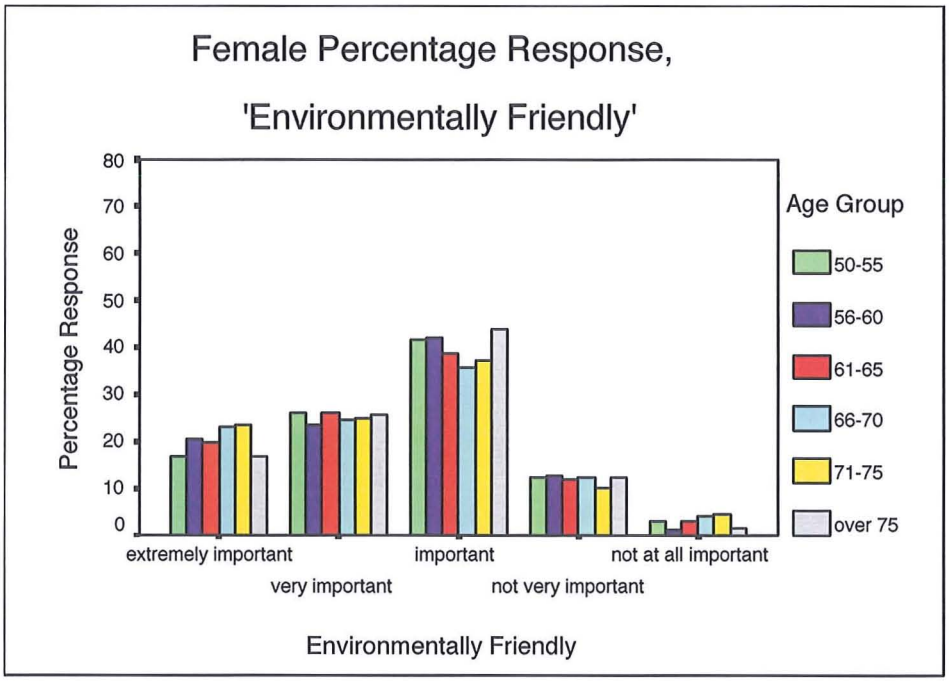
**Report**

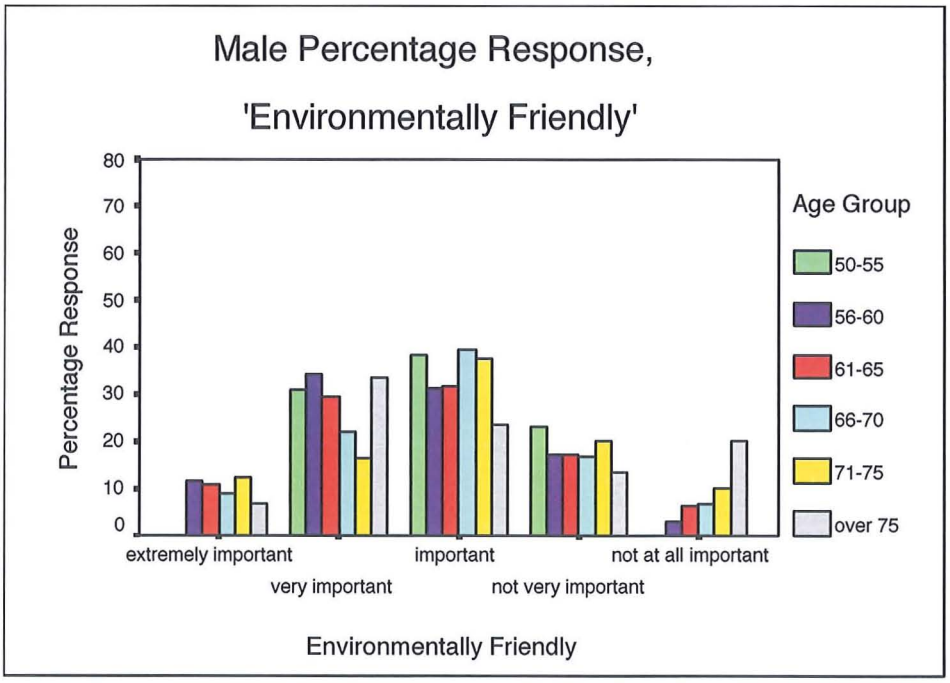
environ friendly

| sex of respondent | Mean | N | Std. Deviation |
|---|---|---|---|
| male | 2.90 | 572 | 1.09 |
| female | 2.50 | 1982 | 1.07 |
| Total | 2.59 | 2554 | 1.09 |

Ap. Figure 68: Factor 6 - Environmentally Friendly

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | extremely important | 496 | 18.3 | 19.3 | 19.3 |
| | very important | 640 | 23.6 | 24.9 | 44.2 |
| | Important | 974 | 36.0 | 37.9 | 82.1 |
| | not very important | 340 | 12.6 | 13.2 | 95.3 |
| | not at all important | 120 | 4.4 | 4.7 | 100.0 |
| | 8 | 1 | .0 | .0 | 100.0 |
| | Total | 2571 | 94.9 | 100.0 | |
| Missing | System | 137 | 5.1 | | |
| Total | | 2708 | 100.0 | | |



**The effects of age and sex on factor 7: purchase price**

The analysis of factor 7 indicates a significant effect of sex of respondent ($F = 2.1$, $df = 1$ and 2578, $p = 0.02$) but no evidence of an effect of age of respondent nor an interaction between sex and age (Ap. Figure 69). Ap. Figure 69 also presents the mean scores for male and female respondents. As with factor 6, female respondents give slightly higher importance ratings to factor 7.

Ap. Figure 69: Factor 7 - Purchase Price

**Tests of Between-Subjects Effects**

Dependent Variable: price

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 27.305[a] | 11 | 2.482 | 2.562 | .003 |
| Intercept | 4467.079 | 1 | 4467.079 | 4610.605 | .000 |
| AGE | 10.168 | 5 | 2.034 | 2.099 | .063 |
| GENDER | 5.629 | 1 | 5.629 | 5.809 | .016 |
| AGE * GENDER | 7.432 | 5 | 1.486 | 1.534 | .176 |
| Error | 2497.748 | 2578 | .969 | | |
| Total | 18543.000 | 2590 | | | |
| Corrected Total | 2525.054 | 2589 | | | |

a. R Squared = .011 (Adjusted R Squared = .007)

**Report**

price

| sex of respondent | Mean | N | Std. Deviation |
|---|---|---|---|
| male | 2.60 | 580 | 1.00 |
| female | 2.45 | 2010 | .98 |
| Total | 2.49 | 2590 | .99 |

Ap. Figure 70: Factor 7 - Purchase Price

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Extremely important | 521 | 19.2 | 20.0 | 20.0 |
| | very important | 669 | 24.7 | 25.7 | 45.7 |
| | Important | 1082 | 40.0 | 41.5 | 87.2 |
| | Not very important | 289 | 10.7 | 11.1 | 98.3 |
| | Not at all important | 44 | 1.6 | 1.7 | 100.0 |
| | 6 | 1 | .0 | .0 | 100.0 |
| | Total | 2606 | 96.2 | 100.0 | |
| Missing | System | 102 | 3.8 | | |
| Total | | 2708 | 100.0 | | |


**The effects of age and sex on factor 8: value for money**

The analysis of factor 8 indicates a significant effect of sex of respondent (F = 11.67, df = 1 and 2620, p = 0.001) but no evidence of an effect of age of respondent nor an interaction between sex and age (Ap. Figure 71). Ap. Figure 71 also presents the mean scores for male and female respondents on the importance of factor 8. Again these suggest that females consider factor 8 as slightly more important than do male respondents.

Ap. Figure 71: Factor 8 - Value for Money

**Tests of Between-Subjects Effects**

Dependent Variable: value for money

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 19.033[a] | 11 | 1.730 | 2.054 | .021 |
| Intercept | 2502.178 | 1 | 2502.178 | 2969.889 | .000 |
| AGE | 5.394 | 5 | 1.079 | 1.280 | .270 |
| GENDER | 9.829 | 1 | 9.829 | 11.666 | .001 |
| AGE * GENDER | 4.233 | 5 | .847 | 1.005 | .413 |
| Error | 2207.391 | 2620 | .843 | | |
| Total | 11046.000 | 2632 | | | |
| Corrected Total | 2226.424 | 2631 | | | |

a. R Squared = .009 (Adjusted R Squared = .004)

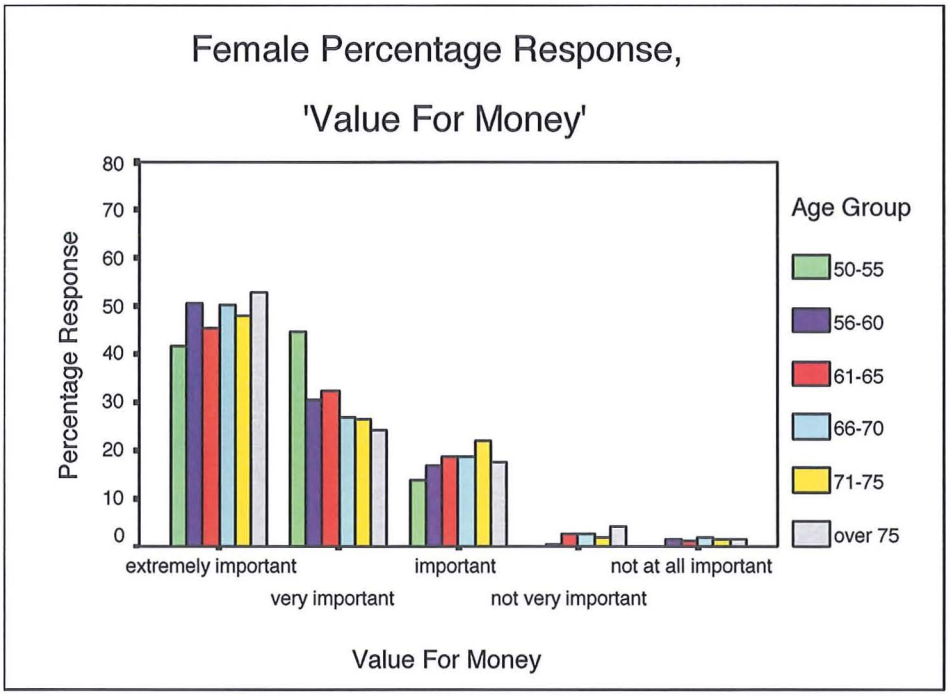
**Report**

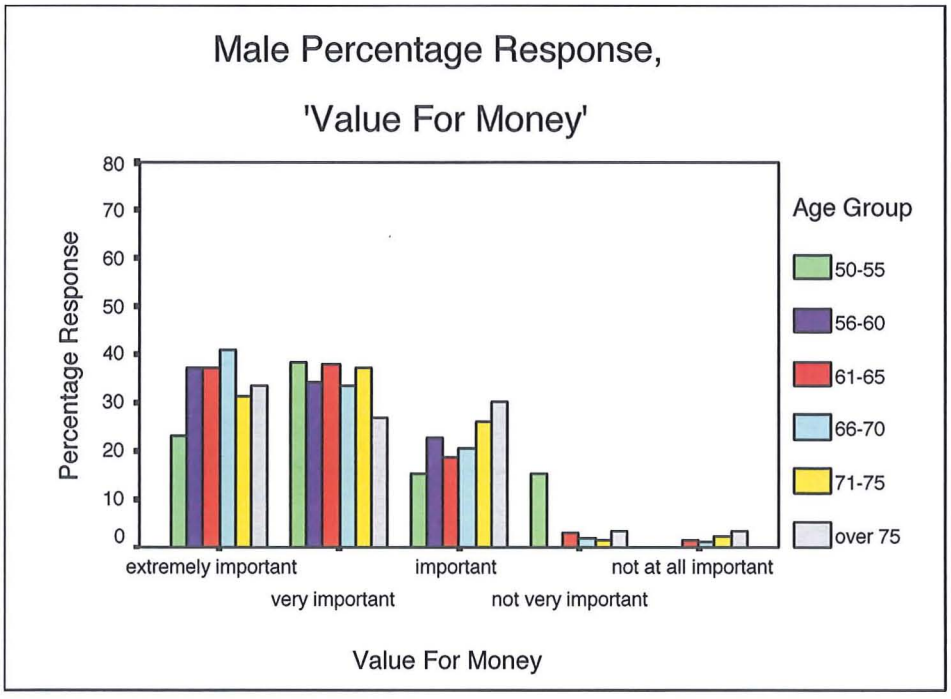
value for money

| sex of respondent | Mean | N | Std. Deviation |
|---|---|---|---|
| male | 1.95 | 587 | .91 |
| female | 1.80 | 2045 | .92 |
| Total | 1.83 | 2632 | .92 |

Ap. Figure 72: Factor 8 -Value for Money

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Extremely important | 1208 | 44.6 | 45.6 | 45.6 |
| | very important | 812 | 30.0 | 30.7 | 76.3 |
| | Important | 529 | 19.5 | 20.0 | 96.3 |
| | not very important | 60 | 2.2 | 2.3 | 98.5 |
| | not at all important | 39 | 1.4 | 1.5 | 100.0 |
| | Total | 2648 | 97.8 | 100.0 | |
| Missing | System | 60 | 2.2 | | |
| Total | | 2708 | 100.0 | | |



**The effects of age and sex on factor 9: It made me feel good**

The analysis of factor 9 indicates a significant effect of sex of respondent ($F = 16.10$, $df = 1$ and $2531$, $p < 0.001$), a significant effect of age of respondent ($F = 2.53$, $df = 5$ and $2531$, $p = 0.03$) but no evidence of an interaction between sex and age (Ap. Figure 73). Ap. Figure 73 also presents the mean scores for male and female respondents and an analysis of homogeneous age groups. The mean scores suggest that female respondents give higher importance ratings to this factor. However, the analysis of homogeneous age groups provides little additional evidence for a relationship between age and importance.

Ap. Figure 73: Factor 9 - It Made Me Feel Good

**Tests of Between-Subjects Effects**

Dependent Variable: feel good

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 120.471[a] | 11 | 10.952 | 6.663 | .000 |
| Intercept | 5799.687 | 1 | 5799.687 | 3528.458 | .000 |
| AGE | 20.795 | 5 | 4.159 | 2.530 | .027 |
| GENDER | 26.464 | 1 | 26.464 | 16.101 | .000 |
| AGE * GENDER | 9.290 | 5 | 1.858 | 1.130 | .342 |
| Error | 4160.177 | 2531 | 1.644 | | |
| Total | 24294.000 | 2543 | | | |
| Corrected Total | 4280.647 | 2542 | | | |

a. R Squared = .028 (Adjusted R Squared = .024)

feel good

| sex of respondent | Mean | N | Std. Deviation |
|---|---|---|---|
| male | 3.17 | 567 | 1.26 |
| female | 2.70 | 1976 | 1.29 |
| Total | 2.81 | 2543 | 1.30 |

**feel good**

| age of respondent | N | Subset 1 |
|---|---|---|
| 50-55 | 76 | 2.66 |
| 56-60 | 211 | 2.66 |
| 66-70 | 771 | 2.78 |
| 61-65 | 644 | 2.79 |
| 71-75 | 745 | 2.86 |
| over 75 | 96 | 3.09 |
| Sig. | | .059 |

Means for groups in homogeneous subsets are displayed.
Based on Type III Sum of Squares
The error term is Mean Square(Error) = 1.644.

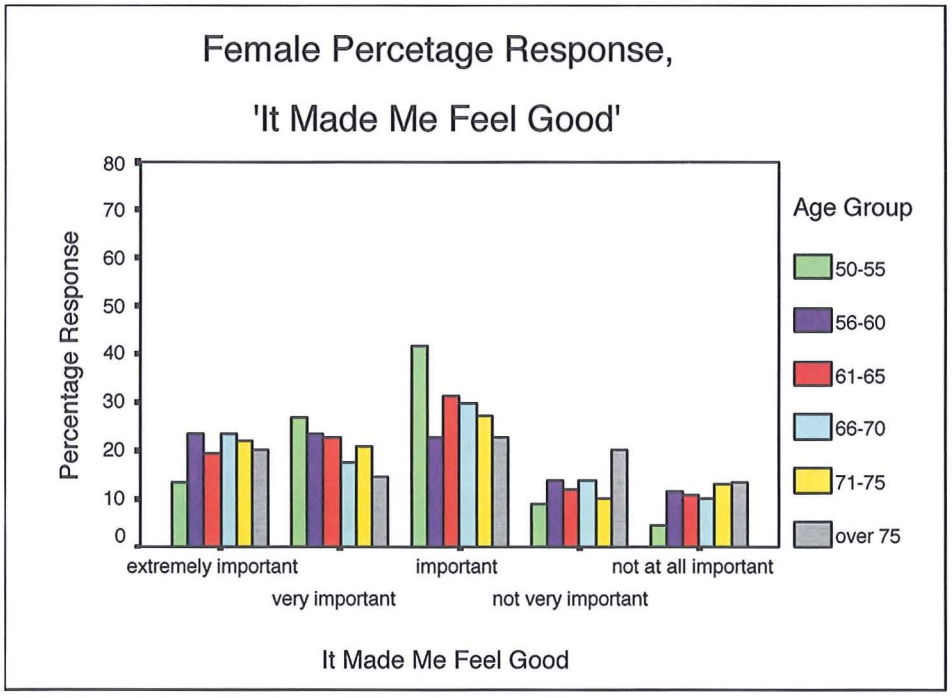
a. Uses Harmonic Mean Sample Size = 184.581.

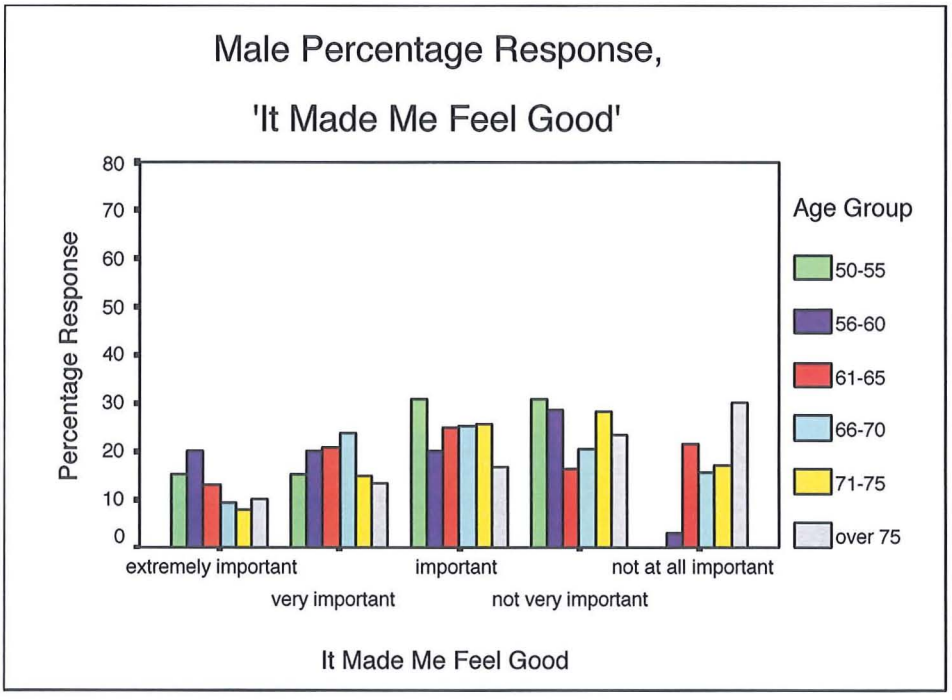
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Alpha = .05.

Ap. Figure 74: Factor 9 - It Made me Feel Good

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | extremely important | 515 | 19.0 | 20.1 | 20.1 |
| | very important | 551 | 20.3 | 21.5 | 41.6 |
| | Important | 757 | 28.0 | 29.6 | 71.2 |
| | not very important | 396 | 14.6 | 15.5 | 86.6 |
| | not at all important | 339 | 12.5 | 13.2 | 99.9 |
| | 6 | 1 | .0 | .0 | 99.9 |
| | 7 | 2 | .1 | .1 | 100.0 |
| | Total | 2561 | 94.6 | 100.0 | |
| Missing | System | 147 | 5.4 | | |
| Total | | 2708 | 100.0 | | |



## APPENDIX 4:

# GLOSSARY OF KEY TERMS

**Anova** - analysis of variance.

Where:

*'the **AVOVA F** statistic is calculated by dividing an estimate of the variability **between groups** by the variability **within groups**:*

$$F = \frac{\textit{variance between}}{\textit{variance within}}$$

*If there are large differences among the treatment means, the number of F (and therefore F itself) will be inflated and the null hypothesis is likely to be rejected; but if there is no effect, the numerator and denominator of F should have similar values, giving an F, therefore, is evidence against the null hypothesis of equality of all three population means'* (Kinnear 2000, p.189).

**df = 'degrees of freedom'** [Kinnear, 2000 #225, p.177. 'The concept of **degrees of freedom** is one of the more elusive statistical ideas. In general the degrees of freedom are calculated as the sample size minus the number of estimated parameters' (Altman 1991, p.181).

**p** = *'**probability**, assuming that Ho is true, of obtaining a value **at least as extreme as the one actually obtained.** Should the p-value be small, this is taken as evidence against Ho. Ho is rejected if the p-value is less than a small criterion probability known as the significance level. .... When the p-value of a statistic is less than the **significance level**, the value of the statistic is said to be **significant'*** (Kinnear 2000, p.148).

***Ho*** = *'In traditional significance testing, ... it is not the experimental hypothesis that is directly tested but its negation, which is known as the **null hypothesis** (Ho')* (Kinnear 2000, p.148).

**Coding -** the process by which the participant groups are indicated by:

*'a code number indicating the method under which the participant was tested. ... Note that these numbers are merely category labels: they are not measurements of the degree to which some property is possessed. Their values, therefore, are entirely arbitrary: any numbers will do, as long as they are different'* (Kinnear 2000, p.46).

**Correlation coefficient** - *'is a statistic devised for the purpose of measuring the strength, or degree, of a supposed linear association between two variable, each of which has been measured on a scale with units'* (Kinnear 2000, p.280).

**Pearson correlation** - *'is so defined that it can take values only within the range from -1 to +1, inclusive. The larger the absolute value (i.e. ignoring the sign), the narrower the ellipse, and the closer to the regression line the points in the scatterplot will fall. A perfect correlation arises when the values of one variable are exactly predictable from those of the other and the Pearson correlation takes a value of +-1, in which case all the points in the scatterplot lie on the regression line. In other cases, the narrower the elliptical cloud of points, the stronger the association, and the greater the absolute value of the Pearson correlation'* (Kinnear 2000, p.280).

**Phi coefficient** - correlation coefficient: *'that measures strength of association between qualitative variable'* (Kinnear 2000, p.14). *'obtained by dividing the value of chi-squared by the total frequency and taking the square root'* (Kinnear 2000, p290). *'Phi indicates the degree of relationship between two category variables (age and year of product) and varies between 0 to indicate 'no relationship' and 1 to signify a 'perfect relationship'* (Davies 2000).

**Probability** or **p value** - *'The p value is the probability of having observed our data when the null hypothesis is true'* (Altman 1991, p.167). *'We can state a hypothesis called the null hypothesis that the effect of interest (the numerical value corresponding to the comparison) is zero'* (Altman 1991, p.165). *'In other words, p assesses how likely it is to observe such an effect in a sample when there is no such difference in the population'* (Altman 1991, p.489).'

**Residuals** - *'the differences between the observed and expected frequencies, or more conveniently, the standardised residuals'* (Kinnear 2000, p.338).

**Standardised residuals** - *'the residuals expressed in standardised form'* (Kinnear 2000, p.338).

**SPSS** - Statistical Package for Social Sciences.

**Significance** - a statistical assessment of probability or p.

# APPENDIX 5:
# SUPPORTING PAPERS

**ART, DESIGN & COMMUNICATION IN HIGHER EDUCATION**
Vol.2 Issue 3, 2004, pp 155 –165, ISSN: 1474-273X
DESIGNING FOR AN AGEING POPULATION: AN INCLUSIVE DESIGN METHODOLOGY

***CItad* 2nd INTERNATIONAL CONFERENCE** Enhancing the Curricula: Towards the Scholarship of teaching in Art, Design & Communication.
*Barcelona 2004*
Title: Active Reflection and the Design Process.
Authors: Elizabeth Wright & Judith Payling

**DESIGNsystemEVOLUTION,** The 6th conference of The European Academy of Design, Bremen, Germany, 29 – 31 March 2005, ISBN 3-89757-290-7.
Title: Reflecting on Design for Social Need.

**International Conference on "Design Education: Tradition and Modernity,** (DETM)." National Institute of Design (NID), Ahmedabad, INDIA.
March 02 – 04.2005 SBN: 81-86199-57-8
Title: Utilising Different Learning Styles to Develop Curricula, Teaching and Learning in Design.
Authors: Kathryn Hearn and Elizabeth Wright

**CItad 3rd INTERNATIONAL CONFERENCE**. Enhancing Curricula 3: contributing to the future, meeting challenges of the 21st Century in the disciplines of art, design and communication. Lisbon -2006
Title: 'Traditional Practice a Contemporary Challenge?'
Authors: Elizabeth Wright and Kathryn Hearn.

**Cltad 4th International Conference,** Enhancing Curricula: using research and enquiry to inform student learning in the disciplines
3 – 4 April 2008, Lycee Francais, New York

| | |
|---|---|
| Authors: | Elizabeth Wright, Kathryn Hearn and Anthony Quinn. |
| Disciplines: | Craft-based Disciplines, Ceramic and Product Design. |
| Objectives: | Making changes to the curricula as a result of the outcomes of research and other forms of enquiry. |
| Contribution: | Symposia Overview. |
| Title: | Design Reflection in Action. |

**Cltad 4th International Conference,** Enhancing Curricula: using research and enquiry to inform student learning in the disciplines
3 – 4 April 2008, Lycee Francais, New York

| | |
|---|---|
| Author: | Elizabeth Wright |
| Title: | Why Reflect? |

**Cltad 4th International Conference**, Enhancing Curricula: using research and enquiry to inform student learning in the disciplines
3 – 4 April 2008 Lycee Francais, New York

| | |
|---|---|
| Authors: | Kathryn Hearn and Elizabeth Wright |
| Contribution: | Symposia; Second Paper of Three:<br>Considering the value of reflection within teaching and learning in the context of studio practice. |
| Title: | "Something's not quite right in my minds eye!" *<br>Critical reflection on studio practice. |

**MAKING FUTURES, THE CRAFTS IN THE CONTEXT OF EMERGING GLOBAL SUSTAINABILITY AGENDAS**

Thursday 17th and Friday 18th September 2009 within the magnificently sited Mount Edgcumbe estate on the River Tamar opposite the city of Plymouth, Devon, UK.
CONFERENCE WEBSITE AT: http://makingfutures.plymouthart.ac.uk/

Title: Endangered Subjects, Crafting Sustainable Minds from Practice Based Education.
Author: Elizabeth Wright.
Institution: National Arts Learning Network

**MAKING FUTURES, THE CRAFTS IN THE CONTEXT OF EMERGING GLOBAL SUSTAINABILITY AGENDAS**
Thursday 17th and Friday 18th September 2009 within the magnificently sited Mount Edgcumbe estate on the River Tamar opposite the city of Plymouth, Devon, UK.
CONFERENCE WEBSITE AT: http://makingfutures.plymouthart.ac.uk/

Title: Only Connect,
21st century cultural practice, thinking and making across continents.
(*Forster E. M. Howards End, Edward Arnold, London 1910)
Authors: Simon Fraser and Elizabeth Wright

**Sustainability in Design: Now! Challenges and Opportunities for Design Research, Education and Practice in the XXI Century**

Edited by Fabrizio Ceschin, Carlo Vezzoli and Jun Zhang
Proceedings of the LeNS Conference, Bangalore, India
29th September to 1st October 2010
LeNS project funded by the Asia Link Programme, EuropeAid, European Commission
Volume 1, Pages 351- 359

Title: Trends and traditions, Negotiating different cultural models in relation to sustainable craft and artisan production
Authors: Simon Fraser, Ulrike Oberlack, Elizabeth Wright

ART, DESIGN & COMMUNICATION IN HIGHER EDUCATION

Vol.2 Issue 3, 2004, pp 155 –165, ISSN: 1474-273X

# DESIGNING FOR AN AGEING POPULATION: AN INCLUSIVE DESIGN METHODOLOGY

Elizabeth Wright

## ABSTRACT

Within the United Kingdom 19 million people, nearly half the electorate, are aged over fifty years, constituting a significant consumer group with a combined annual income of £166 billion (Nicholson, 2001). However, 'everyday products and services are designed in a way that ignores the needs of older people ... excluding them from a society that is youth obsessed (Innovation, 2000).' Whilst designers have access to marketing and ergonomic data, personal perceptions based on negative stereotypes may prejudice the design process. Building on research into professional design practice and the ageing population, this paper proposes an inclusive design methodology to challenge ageist assumptions and contribute to curriculum developments in learning and teaching design in higher education. The research is timely as age discrimination legislation was agreed within the European Union in 2000 (EU Directive, 2000) and is anticipated to be implemented within the UK by 2006 (Age Concern, 2002).

## KEY WORDS

Ageing Population, Inclusive Methodology, Curriculum Developments.

## INTRODUCTION

Youth orientated design, which draws on negative stereotypes and inaccurate assumptions of ageing, has contributed to a potential gap in empathy between younger designers and older consumers. Assumptions about the ageing population and design methodologies affect how designers meet the needs of older people. Idealised notions of youth are often emphasised by denigration of the ageing population and the cumulative effects pervade our expectations. Ageism

has a real impact on the daily lives of individuals (Levy, 2002, p.268) and a social cost to us all (Lloyds Bank 1997).

This paper reflects on the findings of research into design preferences and attitudes within an ageing population to propose an inclusive design methodology. Designing for 'inclusivity' aims to: 'design a built environment, products and services that both cater for the specific requirements of older people and also appeal to other age groups (Foresight, 2000, p.20).' The research considered the appearance of design and the physical functionality of products. Whilst the gerontological implications of ageing (Grimley Evans 1996, Kirkwood 1997) via anthropometric studies based on measuring physical decline (Young 1997) and applied through ergonomic modifications (Pirkl 1994) have been widely researched. Research into visual preferences, beyond the effects of decline in visual acuity (Luck 2001), is limited. As design is often used to differentiate products this omission has implications for design and associated curriculum developments, as falling birth rates and increased life expectancy combine to create the oldest population the world has ever known (Wallace, 1999).

This paper reviews, the methodology used to test these assumptions and models of the design process, before proposing an inclusive design methodology. The conclusion proposes the findings may highlight the potential of a more inclusive approach to design to satisfy both economic and social agendas.

## METHODOLOGY TO TEST THE RESEARCH ASSUMPTIONS

The 'ageing population' are defined within this paper as aged between 50 and 75 years, financially secure and of good health. These parameters were selected to free the discussion from assumptions that prioritise physical functionality. Firstly, the methodology aimed to test the assumption that designers have a limited understanding of consumers post fifty, and secondly, whether these consumers were sufficiently interested in design to warrant specific attention by designers. To test these assumptions, design professionals, consumers and client perceptions were considered within a triangulated methodology. Defining characteristics and appropriate survey

techniques were identified to assess the potential impact of perceptions on design for an ageing population.

A review of the design industry revealed design professionals as a relatively small group clustered in London and the metropolitan areas (Lanre 1998/99). A series of personal interviews, using semi-structured questions was piloted and selected to maintain consistency between interviews and comparison between responses. The interviews represented an opportunistic sample, however, within the survey care was taken to ensure the sample reflected the most balanced gender distribution identified within the designer's working environment, seventy percent male to female. All the interviewees were familiar with the product design process, their range of professional experience extended to include furniture design, engineering, brand management and teaching at graduate and pot-graduate levels. The interviewees were selected as representative of the design profession and not for any specific knowledge of the ageing population. The designer's age varied from twenty-nine to fifty-seven years to assess whether perceptions of ageing were dependent on the age of the respondent. Key terms such as 'design' and 'ageing' were intentionally not specified to avoid biasing the responses and to identify the range of usage. From ten interviews a consensus of opinion was achieved.

To identify the design professional's knowledge of and attitudes to consumers post fifty, they were asked to estimate, in order of priority, the three decades when consumer spending and interest in design were greatest. The designers were aware of the positive financial status of consumers post fifty, estimating the fifties as the decade of maximum consumer spending (50% estimated post forty, 40% pre-forty and 10% unspecified). In contrast, consumer interest in design was estimated to peak in the twenties, followed by the thirties and teenage years, whilst interest in design post forty was considered marginal (13% post forty, 57% pre-forty and 30% unspecified).

The interviews informed the second phase of the methodology, a postal questionnaire including images of products for respondents to express their design preferences and a scaled response to design attitudes. A high degree of design interest and awareness was reflected within the 55% response (2,700 from a 5,000 posting). Average questionnaire response rates are notoriously low,

with 20 % considered extremely high and 30% almost unheard of (Harvey 1999). Members of the University of the Third Age (U3A) were selected as the sample, skewing the results in terms of the general population, as U3A members were assumed to be more articulate and prosperous than the general population but representative within the terms of the research. The interest in design, expressed by the high response rate and detailed completion of the questionnaire, challenged the negative assumptions held by the design professionals interviewed.

A third survey, a postcode analysis of the questionnaire sample tested the assumptions, within the selection of U3A respondents, and validated the sample within the terms of the research. The geodemographic (CACI 1997) analysis was selected for its professionally recognised value to producers and clients.

## THE DESIGN PROCESS

Anticipating anti-discrimination legislation influencing curriculum development and design requirements, the design process was examined to question how misconceptions identified within the methodology remain potent.

Much research in design has focused on analysis of the design process (Archer 1963, Jones 1992, Cross 1984, Lawson 1990) and products (Woodham 1997, Dormer 1991). More recently, the consumer context has been investigated (Miller, 1987) and distinctions made between socially constructed taste (LloydJones 1991, Kalviainen 1999) and personal domains of preference (Putnam T., 1990). Recognition of the importance of the consumer has contributed to the development of user-centred methodologies in design (Aldersey-Williams, 1999) and acknowledgement of the 'emotional functionality (Grinyer, 1998)' products possess.

Designers are often celebrated for their distinctive personal styles, contributing to recognition of 'design personalities' rather than the products they design (CSM, 2001):

'Design based on the idea of individual genius or artistic imagination involves externalisation of internalised images. This involves *a priori* ideas and images. The designer comes first in this

model of the design process. In contrast, solving problems demands robust engagement with the problem itself. The problem comes first (Friedman, 2002, p.12).'

A design education system with a limited understanding of the value of theory (Friedman 2002), or reference to formal design methodologies, may encourage students to develop individual design rationales and, therefore, allow negative 'ideas and images' of consumers post fifty to remain potent. Within studio critiques and presentations, design students may unconsciously learn to focus their work to the needs and expectations of their peer group. The limitations of the group may allow the conceptions that support personal design rationales, to go largely unchallenged.

Younger designers have different life experiences and expectations to consumers post fifty and the gap in knowledge may unconsciously be filled by stereotypes. Where social stereotypes are based on negative assumptions, design solutions may be insensitive and unpopular and rejected by users even if they offer physical benefits (Payling 1998). Recent work by Davies (Davies, 2001) has noted the damaging effects on teaching and learning when differing conceptions of design are left unresolved. If misconceptions are based on inaccurate and outdated conceptions that prioritise physical decline (Barber, 1996), whilst ignoring those qualities that make products a pleasure to use (Green 2002), these products may effectively: 'disable by design (Coleman 2000).'

If designers remain unaware of the need to challenge their assumptions, as they gain experience they may increasingly focus on the generation of design solutions at the expense of thoroughly investigating the context (Lloyd, 1994). There is an implicit danger of 'solution poverty (Ward, 1984, p.229)' if existing solutions are merely reworked to satisfy conceptions, without questioning their validity, creating a double jeopardy within the design process as lack of interrogation may falsely appear efficient if the focus is on time taken rather than the sensitivity of solutions offered.

Professionally held assumptions and societal expectations may be implicitly transferred to design students within their design education. If designers believe: 'design is essentially fashion and young people tend to be more interested in fashion than older people (Levien, 1998),' a self-fulfilling cycle may emerge. The culture within which design is taught and practised creates the

context by which the design process, its problems and solutions, are understood. As Freidman points out: 'it is not experience but our interpretation and understanding of experience that leads to knowledge (Friedman, 2000, p.19).' If the design process is taught with limited reference to the user context and using generalised models of the design process, that unconsciously favours a youth orientated approach, the potential prejudice of the context to influence outcomes may remain unchallenged.

There are numerous discipline specific models of the design process. However, in *Design Methods* John Chris Jones (1992) observes:

'many writers agree, ... it includes three essential stages of analysis, synthesis and evaluation ... breaking the problem into pieces, ... putting the pieces together in a new way ... and testing to discover the consequences of putting the new arrangement into practice (Jones, 1992, p.63)' (illustrated in figure 1).

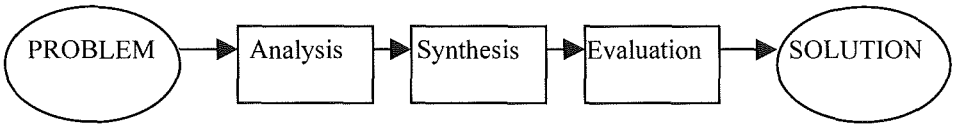



Figure 1: Essential Stages of the Design Process

Whilst these elements reflect the progression of the design process, Nigel Cross identifies the creative element of design as an:

'oscillation between sub-solution and sub-problem areas, as well as decomposing the problem and combining solutions. ... The 'creative leap' is not so much a leap across a chasm between analysis and synthesis, as the throwing of a bridge across the chasm between problem and solution (Cross, 1997, p.439)' (illustrated in figure 2).

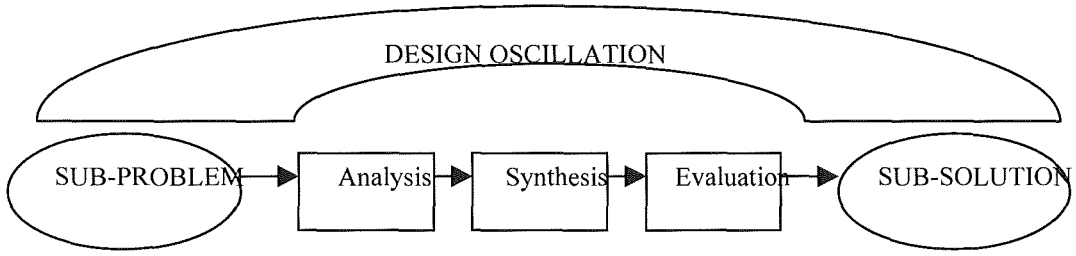



Figure 2: Design Oscillation between Sub-Problem and Sub-Solution

These generalised models have efficiency in their simplicity but also, perhaps, illustrate the potential to interpret design as a 'closed' system with limited opportunities to consult the user. As conceptions of design problems within the cultural context guide conceptions of design solutions, both must rely on the accuracy of the initial conception. If consumer needs differ from those of the designer, conceptions of design problems must be challenged prior to considering the appropriateness of design solutions. An ageing population's perception of design problems may differ from those of young designers and a methodology to promote inclusive design must, therefore, consider:

1.a method to ensure conceptions of design problems are thoroughly considered and based on accurate information, rather than limited assumptions,

2.an enriched design phase from a rigorous search for knowledge rather than reliance on inaccurate stereotypes, and

3.an equal emphasis on checking the implications of the solution from the users perspective, as defining the problem from the design perspective.

## AN INCLUSIVE DESIGN METHODOLOGY

To retain the simplicity of the generalised models, whilst acknowledging their potential limitations if distanced from the consumer, a three-phase methodology is proposed to address the misconceptions of ageing within the design process. Incorporating two phases of analysis, synthesis and evaluation, either side of an enriched design phase, the methodology offers an overview of a contextualised design process, which may incorporate user focused research methods, within a critically reflective system of review. Whilst knowledge of, or access to, the numerous specialist methodologies available (Aldersey-Williams 1999) may not always be possible: 'some data is always preferable to no data at all (Norman, p.25).' By reconsidering the process of design as more than the creative central phase but also the defining of design problems and assessing design solutions, within a changing context, the methodology aims to challenge assumptions whilst encouraging rigorous research and critical reflection (illustrated in figure 3).

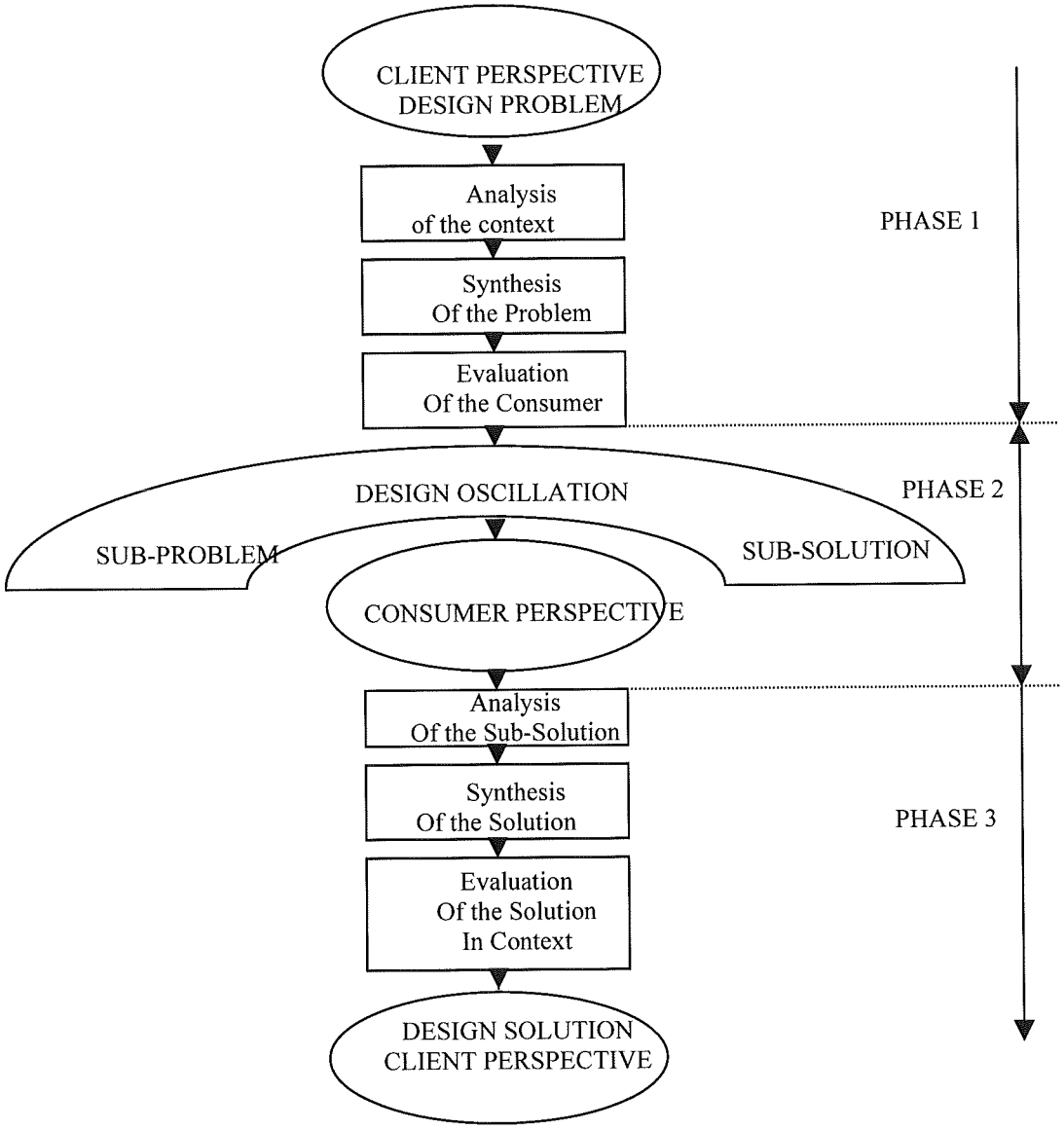



Figure 3: The Inclusive Design Methodology.

Phase 1: Defines the Design Brief - working from the client perspective to negotiate the design brief, Phase 1 aims to identify consumer needs and aspirations. Phase 1 is divided into three stages; introducing the design brief by analysis of the context, synthesis of the problem and evaluation from the consumer perspective, allows negative conceptions to be deferred and then challenged as the nature of the problem is fully explored within the context.

Phase 2: The Design Oscillation – focuses the designer's attention towards the consumer perspective and is the creative centre of the design process, drawing on an intentionally enhanced

range of references identified in Phase 1. Anticipating later modification through Phase 3, conceptions of the problem and proposed solutions should remain flexible, as the implications of these conceptions are considered.

Phase 3: Checks the Solution to the Context – and balances consumer needs against client expectations. Design solutions should be assessed by the same rigorous process from which the problem was defined and not assumed to be sensitive to consumer and client needs.

Criteria against which to judge each stage should be negotiated, as part of the process of understanding the implications of design as: 'most designers will see opportunities not seen before (Grinyer, 1998).' If the designer's experience of the consumer is limited, the staggered interrogation may allow time to understand consumer preferences.

## CONCLUSIONS

For design education to remain relevant it must be responsive to changes within the social context. The ageing population presents opportunities to propose design curriculum that is both socially responsible and economically sustainable (Preiser 2001), essentially a transgenerational approach (Pirkl 1994).

The methodology offers an inclusive approach for teaching and practising design, to challenge assumptions and increase the perception of value for research as part of the creative process of design, by understanding the implications of defining design problems and evaluating solutions. Essentially, designing for unknown consumers and saturated markets. As Laslett suggests: *'Live continually in the presence of all your future selves* (Laslett 1996, p.7).' These issues may have broader relevance within teaching and learning in design, specifically by proposing:

- a deeper learning experience by consciously enriching research within the design process,
- reduced solution poverty within design by acknowledging assumptions of need may be contested (Fry, 1992, p.135), and
- support creative design decisions by consciously considering the value of a contextualised design process, informed by rigorous research and critical reflection.

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***Cltad* 2nd INTERNATIONAL CONFERENCE**
Enhancing the Curricula: Towards the Scholarship of teaching in Art, Design & Communication.

**Title:** Active Reflection and the Design Process.
**Authors:** Elizabeth Wright & Judith Payling
**Institutions:** Central Saint Martins College of Art and Design, University of the Arts, London, and The DARE Foundation, Brighton.
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**Contact:** Elizabeth Wright
**Address:** 5 Southfield Drive, Sutton Courtenay, Oxon. OX14 4AY
**Telephone:** 01235 848631
**Email:** elizabethwr@lineone.net

Elizabeth Wright.

Elizabeth Wright MA lecturers on a range of graduate and post-graduate courses at Central Saint Martins College of Art and Design and the London College of Communication, the University of the Arts, London.

Elizabeth's research interrogates where trends emerge and design thinking and research methods meet in education. These interests are currently focused on identifying ways to extend the designers range of references beyond the parameters of personal knowledge, individual perceptions of need and peer group approval, to enhance an age neutral approach to design in an ageing populations.

Elizabeth has published in areas of design for ageing and design education.

Judith Payling.
Judith Payling is an occupational therapist with experience in a range of roles in the health and social care sector and higher education. She was a research fellow at Central Saint Martins College of Art and Design on an inclusive design research programme from 2000 – 2003. Currently she is the Director of Open Learning for the DARE Foundation. Her research interests include emancipatory research methodology, life course issues, and the design of inclusive services and products. Recent publications include chapters in 'Inclusive Design: Design for the Whole Population' documenting the experience of disabled people of the barriers set up by a non-disabled society.

Judith Payling MSc (Rehabilitation), Dip. COT

## Active Reflection and the Design Process.

**Abstract.**
If scholarship in Art, Design and Communication are to positively respond to the increasing emphasis on inclusion (Barton 2001), diversity (Disability Rights Commission 2003) and the requirements of legislation within the Disability Discrimination Act (DDA) 1995 and Special Educational Needs Discrimination Act (SENDA) 2001, attitudinal change may be required. Drawing on theories of the design process (Archer 1963, Jones 1992, Cross 1984, Lawson 1990), reflective practice (Schon 1983, Moon 2003) and experiential learning (Eraut 1994, Kolb 1984), this paper proposes a combined model as a positive response to the challenges of DDA and a contribution to scholarship within Art, Design and Communication. This enhanced model of design incorporates concepts of reflective practice into a more inclusive notion of the design process, to prompt critical reflection, acknowledge the value of the context to influence decisions and equips practitioners with independent learning strategies to challenge stereotypes and value diversity.

**The Context.**
The graduate population of the United Kingdom is rapidly expanding. 'In 2000 / 20001 more than 21,700 students started undergraduate and post graduate design courses, compared to just over 16,000 in 1994 / 95 (Design Council 2004).' This figure is predicted to rise as a result of government initiatives to encourage fifty per cent of all eighteen to thirty-year olds to enter higher education by 2007 - 2010. These graduates enter a consumer society awash with products: 'typically our homes have 5,000 objects in them (Jerrard, 2000, p.235).' Within this context products fulfil many roles, from pure utility for purpose, to an emotional functionality as markers of social status (Douglas 1996, Green 2002).

Fifteen per cent of the United Kingdom population, 8.7 million people, are disabled. There are 6.8 million disabled people of working age, but only 8% have a degree level qualification compared to 17% of non-disabled people (Disability Rights Commission 2003). Expectations are changing and legislation is one of the driving forces. Art, Design and Communication education must respond to the requirements of the DDA 1995 and SENDA 2001.

Nearly half the electorate, 19 million people, within the United Kingdom are aged over fifty years, constituting a significant consumer group with a combined annual income of £166 billion (Nicholson 2001). Recognising this change in the demographic context, it is anticipated that in 2006 the DDA will be extended to include ageing (Age Concern 2002). However, the creative industries continue to focus on the youth markets, associating design with fashion and fashion with youth (Levien 1998). The UK is consumerist, ageing and increasingly litigious, as consumers who do not meet the stereotypical images promoted by marketing (Featherstone 1995) sue to have their rights addressed. There is a double jeopardy for any industry that continues to rely on a diminishing and credit dependent youth market, whilst ignoring the potential of a financially wealthy, physically healthy and expanding mature consumer market (Buck 1990).

This emerging context poses questions. Firstly, how are DDA legislation and the desire for diversity incorporated into the ethos and curricula of scholarship

when the demands of industry lag behind those of legislation? Secondly, how do people develop transferable skills to cope with the demands of an increasingly flexible labour market: and thirdly, what constitutes a sustainable equation for art, design and communication education?

Art, Design and Communication need to develop an 'inclusive' philosophy integrated into the concepts of scholarship to underpin learning strategies and be translated into working methodologies. Education must aim beyond the immediate context to anticipate the needs of a more socially responsible industrial economy.

A socially responsible use of resources requires a shift in the power relationships within society. Political institutions have begun to legislate to encourage society to embrace a diverse and ageing population. Such legislation is having an immediate effect, for example, policies that move the provision of products for disabled users from local authority providers, to individuals, shifting the power of the purchase from service provider to end user. This shift in the politics of provision impacts on the relationship between products and consumers, as real needs experienced by individuals, take over from assumptions of need made by institutions. If consumers demand, by force of legislation, and offer opportunities, by force of numbers, industry may reassess the role of design to meet these needs. No longer distanced from consumers by intermediaries, designers may appreciate and enjoy the challenge of designing for diverse consumer values.

Whilst legislation may raise awareness, ultimately for change to occur a change in the attitudes of the population is required, from one of fearing difference to one which welcomes diversity. A simple statement perhaps, but to change individual value systems may represent a far from simple task. However, it is perhaps, a fundamental purpose of education to instil values identified as beneficial to society.

The development of research into design and diversity reflects the shift in attitudes from proposing methods of 'objective' observation to methods to enhance empathy and familiarise the designer with alternative perspectives (Aldersey-Williams 1999). However, it is through the emancipation of people with direct experience of disability that progress will occur. The Social Model of Disability, developed by disabled people, moves the onus of 'disability' from the individual:
'The issue then for the emancipatory research paradigm is not how to empower people but, once people have decided to empower themselves, [ask] precisely what research can then do to facilitate this process. ... researchers [and teachers] have to learn how to put their knowledge and skills at the disposal of their subjects, for them to use in whatever ways they choose (Oliver 1992, p.111).'
For emancipation to flourish it must be integrated into educational systems to encourage emancipation within the institution and in the process raise expectations to emancipate others.

**Relating the Social Model of Disability to Design.**

Disability Studies is a developing discipline. People with direct experience of disability are setting the agenda for these studies in academic departments at several universities in the UK (Sheffield & Lancaster). The underpinning philosophy of all these programmes is the social model of disability. Disabled activists challenging the thinking of the day developed this model in the early 1980's. They sought a new model, which moved the 'problem' of disability away from an individual with an impairment to the political, economic and institutional structures of society. Disability had hitherto been seen as a medical issue requiring the attention of those with special training. The social model of disability provides a different framework within which to understand issues that deny many people their right to an ordinary life. This model defines disability not as a physical defect in an individual, or as a personal misfortune, but as a social construction and as a subject for mainstream intellectual enquiry. The social model propounds that society is organised around non-disabled people, frequently by non-disabled people. Attitudinal and physical barriers set up by a dominant able-bodied majority proliferate a view that some people need constant support to lead active lives and that if they could change and fit in, all would be well. This can be, and indeed is, interpreted as oppressive by a large number of disabled people. Artefacts, services and environments not designed to address the diverse needs of the population ramify the affects of impairment and create disability. Barriers embedded within the legal system, the environment and current welfare provision lead to both overt and covert discrimination against disabled people at every level of daily life. These barriers, whilst existing for many people from non-dominant groups in society, are amplified as physical structures exclude the presence of people with impairments from a large slice of public activity.

Protagonists of the social model of disability challenge us to be more inclusive in every aspect of design as it plays such a key role in forming our attitudes and in the ease with which we negotiate the world. Designers need to change because it is morally better to be more inclusive: they are going to have to change because statute law is now adding its voice to that of morality. Expectations of consumers and also of our students add to the driving force towards the study of disability issues in the core of courses, rather than as an add-on specialist module. Art and design research and teaching has no option but to respond to the requirements of legislation (DDA 1995, SENDA 2001) and the developing educational climate which encourages a broader view of the potential student population.

New understanding may be gained through comparative analysis reconsidering concepts within design, education and disability studies, and models derived from these. Models are important because they help shape perceptions of the world (Jerrard 2000, p.233). The potential power of models to change perceptions can be illustrated using *Ergonomi's User Pyramid* model of the population (Benktzon 1993, p.19). Research into inclusive design often proposes that designers should consider the population drawn as a pyramid, with the mass of the population at the broad base and slimming to the apex as the degrees of impairment increases but the proportion of people with impairment within the population decreases. Designers are asked to 'observe' the range of

impairment within the population to illustrate that the more generous the design criteria, and the more designers 'empathise' with a broader average, the greater number of people may use the products designed - essentially an inclusive approach.

However, as the majority of designers are aged under forty years and able bodied, asking them to 'observe' and 'empathise with' disabled people may confirm the experience of difference, rather than reducing the perceptions of distance. In addition, identifying design criteria related to impairment may encourage the concept of an homogenous group with a series of 'problems' to be 'solved' by the designer, reinforcing the conception that 'they' represent a problem to be solved. An emancipatory approach would go further and instead of conceiving impairment as a problem would, instead, consider the disabled person as an 'expert user / consultant', with specialist knowledge to offer to the designer. In this sense *Ergonomi's* model is beneficial, as it proposes considering a broader definition of the ordinary user which not only enables a wider range of users to be considered but also benefits the original consumer group by providing enhanced end products. By questioning the perception and definition of the 'usual', standards are raised for everyone.

Getting to grips with diversity may challenge the accuracy and desirability of social assumptions. By working with a wider range of users, with disabled people working in positions of consultant, with expert knowledge of products in use, the designer may reconsider what constitutes acceptable levels of functionality. At the same time the design process could move from designers with 'empathy', to a process that incorporates and values 'emancipated' users. The benefits of expert knowledge may then feed back into the design process for the benefit of the population as a whole. As with the *Oxo Good Grips* range of kitchen equipment initially conceived to reduce the impact of impaired hand grip strength as a consequence of arthritis, have now become a popular mainstream product of choice valued for comfort and efficiency in use (Formosa 1996).

These concepts have a direct relevance for art, design and communication education. However, whilst the theory of an emancipatory approach appears sound, simple conversion into educational practice may be problematic, because expectations exist between teachers and learners that the former has knowledge, which will be transferred within the learning process. Additionally, learners may be reluctant to be emancipated because this requires active engagement and participation in the learning process.

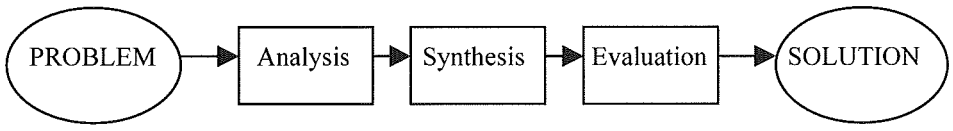
The question is then, perhaps, how to design an educational environment that encourages both an emancipatory ethic and aspiration? This paper proposes that by synthesising theories from experiential learning, the design process and reflection developed in association with 'expert users' within the DARE reflective action learning approach, an enhanced model may emerge to meet these challenges.

**Experiential Learning, the Design Process and the DARE Approach to Active Reflection.**

Experiential learning encourages learners to use their whole life experience and to take a holistic approach to problem definition, problem solving and the design of solutions. Experiential learning offers: 'an opportunity to be involved in an enhancing, shared and co-operative experience where issues of difference, arising from gender, race, sexuality, and disability can be acknowledged and struggled with (McGill 1992).'

Design, as a discipline incorporates a broad and diverse range of subjects, with equally numerous models informed by the theoretical fashions of their time and developed in attempts to explain the central creative process. However, whilst many models exist:

'many writers agree, ... [the design process] includes three essential stages of analysis, synthesis and evaluation ... breaking the problem into pieces, ... putting the pieces together in a new way ... and testing to discover the consequences of putting the new arrangement into practice (Jones 1992, p.63),' (see figure 1).

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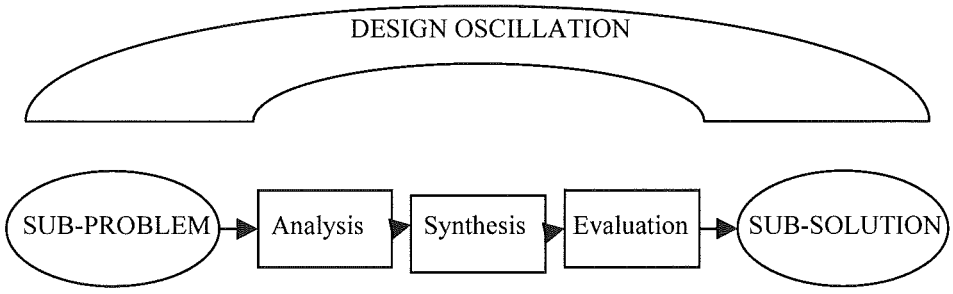


Figure 2: Design Oscillation between Sub-Problem and Sub-Solution

Cross' 'oscillation' echoes Schon's (1983) description of design as a reflective practice, where the design process appears as a conversation between problem and solution.

Simplified models of the design process are efficient in creating perceptions of clarity but often at the expense of a number of limitations:

• Progression within design models - 'the actual sequence of design thinking and decision making is not a simple linear process ... and the problems addressed by designers do not in actual practice yield to any linear analysis and synthesis yet proposed (Buchanan 1992, p.15).'
• Design as a 'Problem' Solving and 'Solution' Focused Approach - design is often considered: 'as essentially a *problem-solving* process (Ward 1984, p.232).' 'The problem for designers is to conceive and plan what does not yet exist (Buchanan 1992, p.18).' However, design problems often remain ill defined and therefore, resistant to complete analysis, which might provide a 'correct' solution. In this context a: 'solution-focused strategy is clearly preferable to a problem-focused one (Cross 1982, p.224),' although dependent on the definition of the problem.
• Designing to satisfy 'needs' - when perceptions of 'need' are contested they may become dependant on the position of the designer. 'If the definition of need is not deconstructed, the ... solutions will remain either limited or flawed (Fry 1992, p.43).'
• Design perceived as a closed system - within models of design there is: 'the potential to interpret design as a 'closed system' with limited opportunities to consult the user. As conceptions of design problems within the cultural context guide conceptions of design solutions, both must rely on the accuracy of the initial conception. If consumer needs differ from those of the designer, conceptions of design problems must be challenged prior to considering the appropriateness of design solution (Wright 2003).'
• These models emphasise the researcher view - 'the whole process is seen with the organisers viewpoint: how the process has to be organised, what happens in every phase. The main goal of the research is to get the answer to the questions: What? Who? And How? (Anttila 2000, p.190).'

A diverse population requires models to address these limitations, maintain clarity and acknowledge the value of asking What? Who? and How? but also Why? Why do we accept questionable assumptions and can the social model offer alternative perspectives, to incorporate and encourage diversity to enhance the educational process?

For example, a research project was undertaken by the DARE Foundation, a small national charity that works with disabled people to bring about a more inclusive society (DARE 2004). The study explored consumers' requirements of service providers and identified that the traditional training people had received to do their job did not seem to result in staff who listened to people with diverse and different needs (Fardell 1997). The service users were not consulted in a meaningful way in matters that most directly concerned them. Assumptions were made about what was required based on a theoretical understanding or stereotypical information and generalisation. It was clear that this was not just on a personal level but was institutionalised in many aspects of society. These findings were supported by research into inclusive design, where disabled people described how they were excluded from many mainstream activities because the original concept of a service, developed without their input, had not addressed their needs (Payling 2003). Adaptation and modification at a later date proves to be immensely costly. All too often, it appeared that service designers and providers, expected

people to accept what they had to offer rather than to involve them in finding solutions together.

Take for instance, the commonplace activity of travelling. On the same journey, someone with mobility impairment can be both disabled, and not disabled, by the transport system. New trains provide easy access and travel comfort because of sound inclusive design, however there are stations with so many barriers that someone who uses a wheelchair cannot disembark to reach their destination! London taxis are another example, now designed to be fully accessible and to comply with the DDA, disabled people can be disabled by the attitude of the cab driver who is reluctant to facilitate their use by someone they perceive as not being an 'easy fare'. These issues raised a further question: how can teachers be certain that what they know is valid in the context of the everyday lives of the people for whom artefacts, the environment and services are designed and delivered?

In response, DARE has developed an open learning enquiry-based programme. The underpinning principles of the DARE approach derive from the social model of disability, experiential learning, action research and theories of reflection. The approach encourages students to value many forms of knowledge, to perceive self and personal experience as a resource, to learn more about alternative perspectives, to explore the lived experience of people with diverse and different backgrounds and to use deep reflection as an integral part of learning. Learners engage in a cyclical process of personal and group enquiry, reflection and challenge, throughout their studies.

Reflection is an integral part of learning. However if reflection is to bring about a change in action, the reflector needs to develop not only a multi-dimensional understanding of the problem but also a different view of him / herself in the process. The DARE programme appears to have the desired impact:

'Through undertaking the studies I have developed more as an independent thinker, I have become more confident knowing I am well able to substantiate my views and offer an informed opinion on work and practice issues. ...

I have had to focus on my own values, beliefs and attitudes. I am becoming more self-aware and I am developing a greater understanding of others – this has had an impact both personally and professionally. I am now more open-minded to diversity and cultural difference. I am meeting lots of new people and I am realising the power of the mind in overcoming the hardships and negative experiences that people can encounter around disability (Current student 2004).'

The DARE approach seeks to transform experience at a individual level into knowledge which can be applied through to work groups, on to organisations, in to local communities and finally has an impact in the macro-environment of society. It aims to help learners to minimise their pursuit of narcissistic goals which benefit no one but themselves: rather it brings a richness of contextual information through the direct experience of working with people

who will be affected by the consequences of the actions and interactions of the learner. These principles, of development through experience, reflection, reconsideration by abstract conceptualisation and change by active experimentation follow Kolb's Learning Cycle (see figure 3).

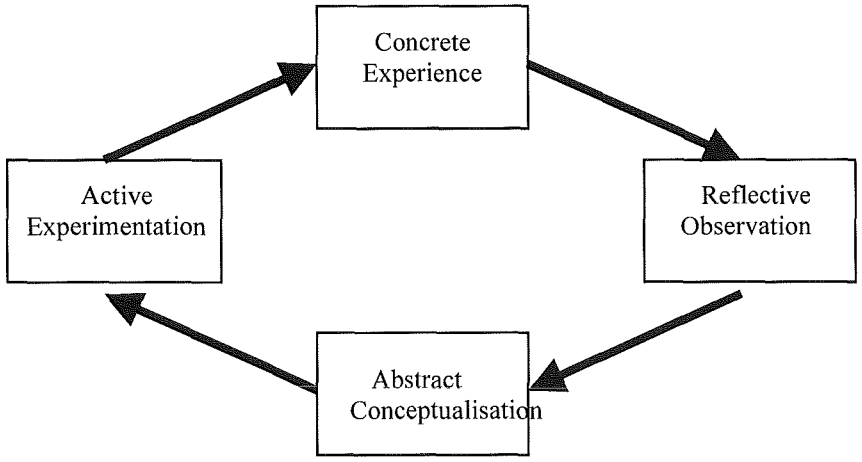


Figure 3: Kolb's Learning Cycle

The design process can be modelled, following Kolb's cycle, as a cyclical process. This conception of design more accurately reflects the progressive development from perceptions of the problem, through analysis, synthesis and evaluation, prior to proposing solutions (see figure 4).

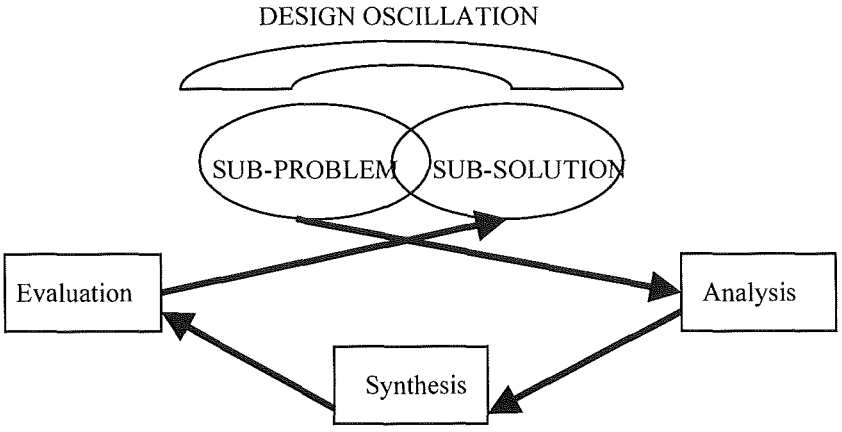


Figure 4: The Design Process Conceived as a Cycle.

This model, where design is conceived as a cycle, incorporates Cross' proposed creative design oscillation between sub-problems and sub-solutions (1997).

Educationalists, in their critique of models of experiential learning site similar grounds to those for models of the design process, namely as too simplistic and perceived as paying insufficient attention to reflection (Brookfield 1995). The DARE approach addresses these criticisms by encouraging a greater focus on individual and group reflection, which if transferred into the design process would enhance the reasoning behind design decisions.

DARE's cycle of active reflection introduces additional enquiry, reflection and challenge phases at each stage of Kolb's experiential cycle (see figure 5).

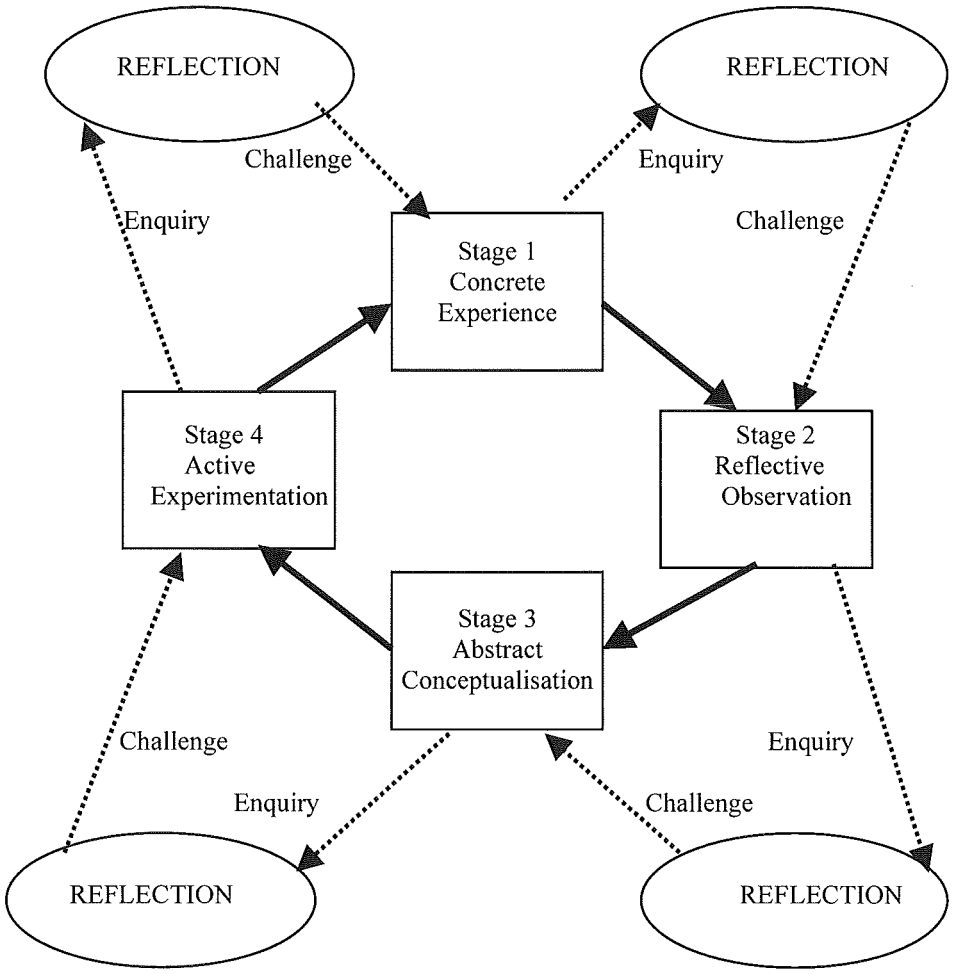


Figure 5: DARE's Cycle of Active Reflection.

**The Proposed Model.**

Concepts from experiential learning, the design process and DARE's active reflection are synthesised to propose as an enhanced model for reflective design (see figure 6). In the proposed model, the inner circle is orientated through the key stages of the design process; 'design brief', 'interrogation of the brief', 'design oscillation' and 'testing the solutions'. Around the central cycle are a series of structured 'analysis', 'synthesis by reflection' and 'evaluation cycles' for each stage in the design progression.

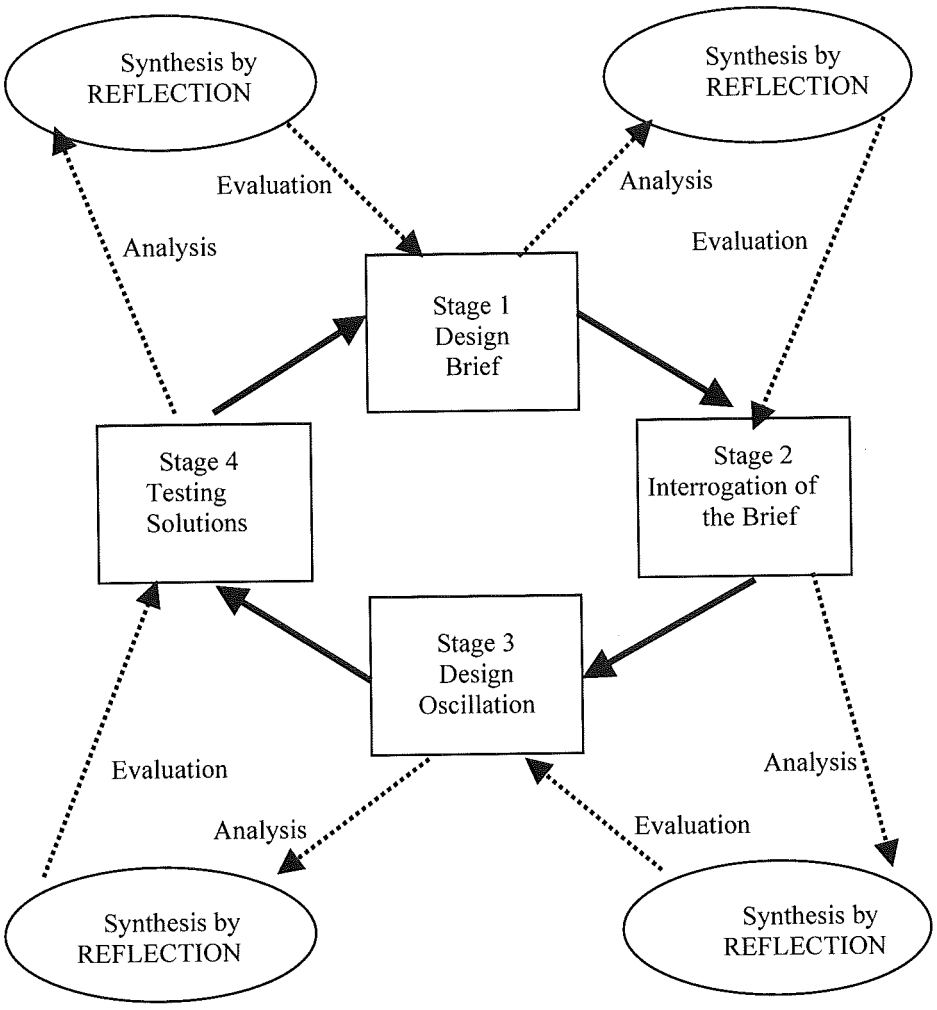


Figure 6: Proposed Model for Reflective Design.

Stage 1: Concrete Experience - Kolb describes a cycle firmly based on the concrete experience of learners. This may be experience that they bring from their everyday life and work but it may need supplementing with other learning triggers. In design terms, this is where the design brief is introduced and would ordinarily be interpreted based on the designers existing experience.

Stage 2: Reflective Observation - this stage is essential to interpret the nature of the concrete experience and sets the scene for redefinition of the 'problem'. From 'analysis', 'synthesis by reflection' and 'evaluation' the information and assumptions on which the design brief is based are reconsidered and interrogated for their validity.

The first two stages are usually seen as private activity. The DARE approach applied to design seeks to move the first two phases in the cycle from an introverted, and therefore potentially self-affirming process, towards an open process which challenges the learner to examine their assumptions and hence the validity of their reasoning. The learner does this through interaction with

people with diverse backgrounds during which learning and reflections are shared.

Stage 3: Abstract Conceptualisation - is the phase where learners build a new theory or modify an existing one about the nature of the issue being explored. This phase involves the construction of a different way of thinking, making generalisations from the first two phases and identifying connections between apparently separate pieces of knowledge. This is the creative centre of the process in design terms, the 'design oscillation' between conceptions of the sub-problem and sub-solution.

Stage 4: Active Experimentation - the final stage in the cycle promotes the testing of ideas. On completion of the cycle learners may be ready to radically alter their actions, however, at other times they will feel that only a small modification is necessary. Each adjustment creates a new experience from which to begin the cycle once more. This is the evaluation phase for design, when the sensitivity of the proposed solutions are tested against the specified criteria and in the light of new knowledge.

**Measuring Reflection within Design.**
The benefits of critical reflection have been noted by Carol Jones, of Nottingham Trent University, within group work and personal learning journals and: 'the emphasis students place on peer learning and learning from the lived experience (Jones 2001, p.8).' Whilst DARE have found critical reflection enables learners to:
• Question, reframe or replace assumptions that they had previously held as common sense or shared wisdom.
• Take an alternative perspective on ideologies, knowledge, action, and forms of thinking they had previously accepted as 'true'.
• Recognise the dominance of certain sets of values, which underpin the existing power structures and marginalise under represented groups.

The benefits of the proposed reflective approach for design follow from observations and reflections on the similarities within expertise from a number of perspectives with direct relevance to art, design and communication. The proposed model encourages the incorporation of diversity within scholarship by:
• Conscious reflection within the design process helps make deeper learning explicit. Valuing both design and 'expert user' knowledge changes personal value systems to create opportunities to challenge negative assumptions and outdated social stereotypes.
• By translating theory into practice within the institution and curriculum the proposed model increases awareness of the implications of sustainable design, the social model of disability and DDA within the consumer context.
• Recognising the value of transferable skills within design education, by using reflective methods, enhances positive learning experiences for a range of learning styles.

The essence of design for diversity is, perhaps, to challenge the assumptions on which it is based and to reflect on the equity of the solutions proposed.

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# Reflecting on Design for Social Need.

Elizabeth Wright – elizabethwr@lineone.net
Central Saint Martins College of Art & Design, University of the Arts London.

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**Key Words:**
Design models, reflective practice and emancipated users.

**Abstract.**
Designing for social need requires defining what constitutes 'social need'. The question becomes whose need, when, where and why? These issues are complicated when need is a contested category (Fry 1992), resources are finite and the sustainability of solutions open to question. Defining 'need' requires knowledge. However, as Friedman observes: 'it is not experience, but our interpretation and understanding of experience that leads to knowledge (Friedman 2000).'

The questions for design are perhaps, firstly, how do we interpret and understand experience and secondly, how do we select the experiences on which we construct the knowledge used to define need? This paper proposes developing reflective practice may enhance the quality of decision making by raising awareness of the experience of knowledge acquisition as it changes our perceptions within the design process. This increased level of awareness aims to make explicit the ambiguity within the design process and the multitude of influential factors. Not least amongst these factors are the limitations of individual knowledge. Most noticeable, perhaps, when designing for areas beyond the immediate range of the designers personal experience, for example, design for people with disabilities and ageing populations. If left unexposed and unchallenged, such limitations may be compounded by an unconscious reliance on negative stereotypical images and social prejudice.

With 6.8 million disabled people of working age within the United Kingdom and 19 million people, nearly half of the electorate, aged over fifty years there is an enormous potential market for socially inclusive design. With the introduction of the Disability Discrimination Act (1995) and its anticipated extension to include ageing in 2006, European legislative initiatives are providing the legal framework for action.

Reflective practice offers a method to expose the extent and range of what is 'known' and 'unknown' within the design process, and a structure with which to interrogate the validity of implicit assumptions within any definitions of social need. Drawing on theories from education (Kolb 1984), reflective practice (Schon 1983; Moon 2003) and design (Archer 1963; Cross 1984; Lawson 1990; Jones 1992) this paper proposes a synthesised model of reflective design to contribute to the search for 'solid and well-grounded knowledge'.

**The Context.**

In a world with rapidly expanding access to information, there is an increasing awareness that local actions may have global implications where resources are finite and are assessed against contested perceptions of 'need' (Fry 1992). Within consumerist societies awash with products where: 'typically our homes have 5,000 objects in them (Jerrard 2000, p.235)' sustainability becomes questionable. Design theory and design practitioners, as active participants in the process of production and consumption, have a unique opportunity to affect change. By more fully considering the implications of the design process and the consequences of their actions, designers may alter the interpretation and understanding of the experiences by which we construct the knowledge used to define 'need'. By reflecting on the implications of definitions of 'need', greater understanding of what might represent 'socially responsible design' may be achieved. This discussion is timely because of the awareness of the finite nature of resources and contested nature of 'need', but also from a growing acceptance of the creative industries as a source for economic growth and an increased recognition of the positive value of social diversity.

In response to these expectations the United Kingdom (U.K.) graduate population is rapidly expanding, from just over 16,000 in 1994 / 95, to more

than 21,700 students starting undergraduate and post graduate design courses in 2000 / 2001 (Design Council 2004). This trend is predicted to continue as a result of government initiatives to encourage fifty per cent of all eighteen to thirty-year olds to enter higher education by 2007 - 2010. However, fifteen per cent of the U.K. population, 8.7 million people, are disabled, with 6.8 million disabled people of working age, but only 8% have a degree level qualification compared to 17% of non-disabled people (Disability Rights Commission 2003). Whilst nearly half the electorate, 19 million people, within the U.K. are aged over fifty years, constituting a significant consumer group with a combined annual income of £166 billion (Nicholson 2001).

Within this context it is, perhaps, surprising that the creative industries continue to focus on the youth markets, associating design with fashion and fashion with youth (Levien 1998). Especially, as the UK market is consumerist, ageing and increasingly litigious, as consumers who do not meet the stereotypical images promoted by marketing (Featherstone 1995) sue to have their rights addressed. There is a double jeopardy for any industry that continues to rely on a diminishing and credit dependent youth market, whilst ignoring the potential of a financially wealthy, physically healthy and expanding mature consumer market (Buck 1990). But more fundamentally, perhaps, these changes question the role of design to satisfy these expectations, whilst anticipating the implications of their actions when the demands of industry may lag behind those of legislation? Design, as a champion for innovation, should look beyond the immediate context to anticipate what a more socially responsible industrial economy might constitute and how these aspirations might be translated into working methodologies.

A socially responsible use of resources requires a shift in the power relationships within society. Political institutions have begun to legislate to encourage society to embrace a diverse and ageing population. Such legislation is having an immediate effect, for example, policies that move the provision of products for disabled users from local authority providers, to individuals, shifting the power of the purchase from service provider to end user. This shift in the politics of provision impacts on the relationship between products and consumers, as real needs experienced by individuals,

take over from assumptions of need made by institutions. If consumers demand, by force of legislation, and offer opportunities, by force of numbers, industry may reassess the role of design to meet these needs. No longer distanced from consumers by intermediaries, designers may enjoy the challenge of designing for a broader range of values.

Whilst legislation may raise awareness, ultimately it may require a change in the attitudes of the population from fearing difference to welcoming diversity. However, changing how individuals understand and interpret experience may be far from simple. If designers are to be more than passive servants to consumerism, we must examine what constitutes socially beneficial values, for whom and why?

Research into design and diversity reflects the shift in attitudes examining the impact of design, from methods of 'objective' observation of products in use, to those of enhanced empathy with users, which aim to familiarise the designer with alternative perspectives (Aldersey-Williams 1999). However, familiarity with alternative perspectives in itself can not guarantee positive changes in behaviour. It is through the emancipation of people with direct experience and therefore, understanding of alternative perspectives, such as disability, that progress will occur. For example, the Social Model of Disability, developed by disabled people, moves the onus of 'disability' from the individual to interrogate the impact of the designed environment on the individual.

**Relating the Social Model of Disability to Design.**

Disability Studies is a developing discipline. Disabled activists developed this model in the early 1980's, as they sought a new model, which moved the 'problem' of disability away from an individual with an impairment to the political, economic and institutional structures of society. Disability had hitherto been seen as a medical issue requiring the attention of those with special training. The social model of disability defines disability not as a physical deficit in an individual, or as a personal misfortune, but as a social construction that denies many people their right to an ordinary life. The social model identifies that society is organised around non-disabled people, frequently by non-disabled people. Attitudinal and physical barriers set up by the able-bodied majority proliferate a view that some people need constant

support to lead active lives and that if they could change and fit in, all would be well. This can be, and indeed is, interpreted as oppressive by a large number of disabled people (Payling 2003).

Protagonists of the social model of disability challenge us to be more inclusive in every aspect of design as it plays such a key role in forming our attitudes and in the ease with which we negotiate the world. Products fulfil many roles, from pure utility for purpose, to an emotional functionality as markers of social status (Douglas 1996). The changing expectations of consumers combined with legislation (DDA 1995, SENDA 2001) are encouraging a broader discussion into what constitutes socially responsible design.

It has been proposed that new understanding may be gained through comparative analysis of concepts and models from design, disability studies and education (Wright 2004). Models are important because they help shape perceptions of the world (Jerrard 2000, p.233). The potential power of models to change perceptions can be illustrated using *Ergonomi's User Pyramid* model of the population (Benktzon 1993, p.19). Research into inclusive design often proposes that designers should consider the population drawn as a pyramid, with the mass of the population at the broad base and slimming to the apex as the degrees of impairment increases but the proportion of people with impairment within the population decreases. Designers are asked to 'observe' the range of impairment within the population to illustrate that the more generous the design criteria, and the more designers 'empathise' with a broader average, the greater number of people may use the products designed - essentially an inclusive approach.

However, as the majority of designers are aged under forty years and able bodied, asking them to 'observe' and 'empathise with' people with disabilities may confirm the experience of difference, rather than reducing the perceptions of distance. In addition, identifying design criteria related to impairment may encourage the concept of a homogenous group with a series of 'problems' to be 'solved' by the designer, reinforcing the conception that 'they' represent a problem to be solved. An emancipatory approach would go further and instead of conceiving impairment as a problem would, instead, consider the disabled person as an 'expert user / consultant', with

specialist knowledge to offer to the designer. In this sense *Ergonomi's* model is beneficial, as it proposes considering a broader definition of the ordinary user which not only enables a wider range of users to be considered but also benefits the original consumer group by providing enhanced end products. By questioning the perception of the model designers must challenge their understanding of the experience on which they base their design knowledge and actions. And by questioning the definition of what constitutes the 'usual', standards are raised for everyone.

Getting to grips with diversity challenges the accuracy and desirability of social assumptions. By working with a wider range of users, where people with disabilities work in positions of consultant, with expert knowledge of products in use, the designer may reconsider what constitutes acceptable levels of functionality. At the same time the design process could move from designers with 'empathy', to a process that incorporates and values 'emancipated' users. The benefits of expert knowledge may then feed back into the design process for the benefit of the population as a whole. As with the *Oxo Good Grips* range of kitchen equipment, initially conceived to reduce the impact of impaired hand grip strength as a consequence of arthritis, which have now become a popular mainstream product of choice valued for comfort and efficiency in use (Formosa 1996).

These concepts have a direct relevance for socially responsible design. However, whilst the theory of an emancipatory approach appears sound, simple conversion into practice may be problematic, because of the limited interrogation of our understanding of the experiences from which we draw our conceptions of knowledge. Paradoxically, perhaps, both designers and users may be reluctant to be emancipated because this requires active engagement and participation in the design process and recognition of the global implications of local preferences.

The question is then, perhaps, how to design to encourage both an emancipatory ethic and aspiration? This paper proposes that by synthesising theories from experiential learning, the design process and reflection developed in association with 'expert users', an enhanced model may emerge to meet these challenges.

**Experiential Learning, Active Reflection and the Design Process.**

Experiential learning encourages learners to use their whole life experience and to take a holistic approach to problem definition, problem solving and the design of solutions. Experiential learning offers: 'an opportunity to be involved in an enhancing, shared and co-operative experience where issues of difference, arising from gender, race, sexuality, and disability can be acknowledged and struggled with (McGill 1992).' However for learning to occur, as a consequence of experience, this must be desired by the individual who must also have a willingness to change their behaviour as a result of the process of learning. Even though these conditions may inhibit the learning process if absent in the learner, their presence is often taken for granted. Such assumptions might in part be traced to the widely used and often simplified models of Kolb's experiential learning cycle (figure1). For as Moon observes: 'an important feature of Kolb's idea is that the process of learning perpetuates itself (Moon 1999, p.25).' Moon challenges the assumption that perpetuation is inevitable within a cyclical progression where: 'assimilation is the intake of information from the environment and accommodation is the modification of what is already known by the learner in the light of new learning (Moon 1999, p.25).'

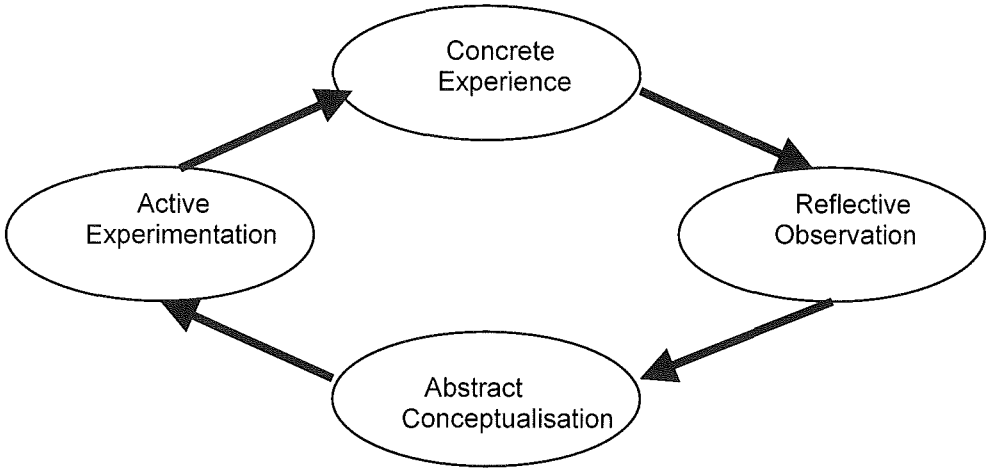


Figure 1: Kolb's Experiential Learning Cycle

Evidence to support the observation that learning may not automatically follow from exposure to experience may be drawn from design for an ageing population. For it might reasonably be assumed that the scale, range and financial resources of the ageing population should almost guarantee an inclusive response by designers and industry. However, the creative industries appear immune to these influences as: 'everyday products and

services are designed in a way that ignores the needs of older people (Innovation 2000).' Moon's analysis may explain the resistance to learning from experience when she observes how Kolb: 'uses his model to imply that learners may vary in their abilities to function in the different sectors of the cycle (Moon 1999, p.26).' The emotionally charged and often negative social attitudes associated with ageing may reduce the ability to 'accommodate' such information even if 'assimilated' by experience. Such blocking in the accommodation of information may reduce the effectiveness of short-term experiential learning but also contribute to long-term resistance to changes in behaviour by entrenching previously held and habituated conceptions. The challenge is, therefore, to propose a method to overcome negative conceptions and to contribute to a positive and responsive experiential learning process for design.

In an attempt to overcome the negative power of prejudice, the DARE Foundation, a small national charity that works with disabled people to bring about a more inclusive society has developed an open learning enquiry-based programme. The underpinning principles of the DARE approach derive from the social model of disability, experiential learning, action research and theories of reflection. The approach encourages students to value many forms of knowledge, to perceive self and personal experience as a resource, to learn more about alternative perspectives, to explore the lived experience of people with diverse and different backgrounds and to use deep reflection as an integral part of learning. However if reflection is to bring about a change in action, the reflector needs to develop not only a multi-dimensional understanding of the problem but also a different view of him / herself in the process.

The DARE approach seeks to transform experience and brings a richness of contextual information through the direct experience of working with people who will be affected by the consequences of the actions and interactions of the learner. These principles, of development through experience, reflection, reconsideration by abstract conceptualisation and change by active experimentation follow Kolb's Learning Cycle. However, DARE's cycle of active reflection introduces additional enquiry, reflection and challenge phases at each stage of Kolb's experiential cycle (figure 2).

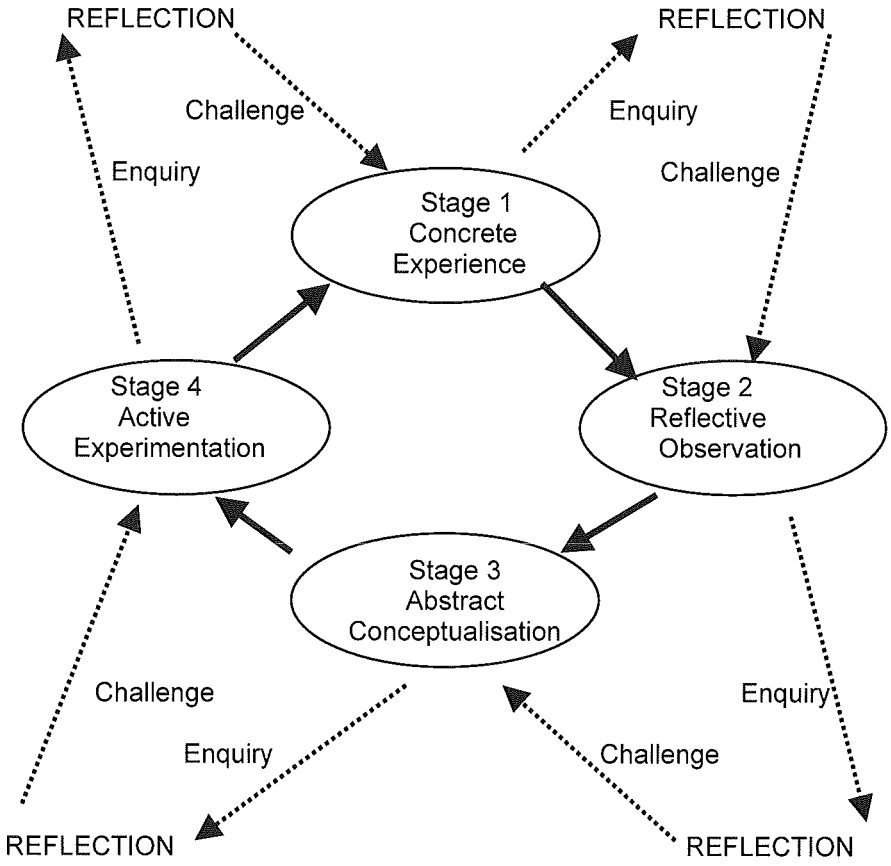


Figure 2: DARE's Cycle of Active Reflection.

In design terms, it is interesting to note the similarities within the DARE approach and theories of the design process. The iterative nature of the repeated sequence of 'enquiry, reflection and challenge' echoes the 'analysis, synthesis and evaluation' central to the design process (Jones 1992, p.63). However, as Buchanan observes: 'the actual sequence of design thinking and decision making is not a simple linear process ... and the problems addressed by designers do not in actual practice yield to any linear analysis and synthesis yet proposed (Buchanan 1992, p.15).'

Whilst models of an apparently sequential processes may reflect the progression within the design process, Cross proposes the creative element of design may more accurately be described as an:
'oscillation between sub-solution and sub-problem areas, as well as decomposing the problem and combining solutions. ... The 'creative leap' is not so much a leap across a chasm between analysis and synthesis, as the

throwing of a bridge across the chasm between problem and solution (Cross 1997, p.439)'

This 'oscillation' echoes Schon's (Schon 1983) description of the design process as a conversation between problem and solution and design as a reflective practice.

The notion of developing the reflective element of the design process, by mapping the design cycle onto DARE's development of Kolb's experiential learning cycle, has previously be proposed (Wright 2004). The central cycle described the stages of the design process:

- Stage 1 – Design Brief,
- Stage 2 – Interrogation of the Brief,
- Stage 3 – Design Oscillation and
- Stage 4 – Testing the Solutions.

Each stage of the process exposed by conscious iteration of the 'analysis, synthesis by reflection and evaluation' sequence. However, the design process is complex and different thinking styles are required at different stages within the process. For example, reflection is ideally suited to defining and interrogating the brief and then testing the proposed solutions as it: 'is a mental process with purpose and / or outcome. It is applied in situations where material is ill structured or uncertain in that it has no obvious solutions (Moon 1999, p.5).' Similarly, design problems often remain ill defined and therefore, resistant to complete analysis, which might provide a 'correct' solution. As Buchanan observes: 'the problem for designers is to conceive and plan what does not yet exist (Buchanan 1992, p.18).' Design is, therefore, often considered: 'as essentially a *problem-solving* process (Ward 1984, p.232),' which focuses on proposing solutions.

However, Cross suggests the oscillation phase represents the 'creative leap' identifying an apposite concept which moves the design: 'to a new part of the solutions space (Cross 1997, p.427),' rather than adopting: 'a radical shift of perspective (Cross 1997, p.427).' This process may differ from the consciously reflective sequence of analysis, synthesis and evaluation, and represent more than a simple reworking of 'variations on previous designs (Cross 1990, p.129).' Recognising these differences, a combined model, which draws on theories from Experiential Learning, Active Reflection and the Design Process is proposed (figure 3).

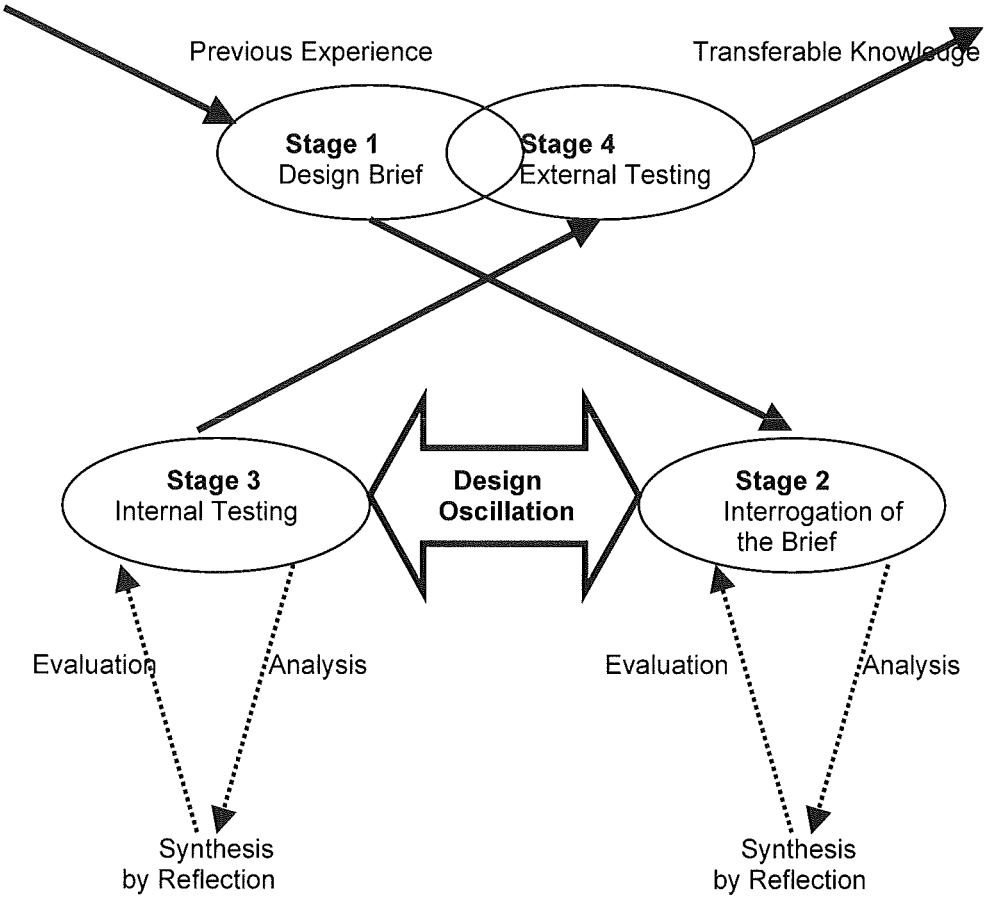


Figure 3: Model of Reflective Design.

Within the proposed model of reflective design, the essence of Kolb's model is maintained as the central cycle, renamed to reflect the design process, with two reflective sequences of 'analysis, synthesis and evaluation' defining and testing the design criteria either side of the creative oscillation. However, the cycle is modified so that the fourth stage is reconsiders against the first stage, and the proposed solutions checked against the original brief.

- Stage 1 Design Brief: introduction of the brief to the designers who come to the project with a range of previous experiences and expectations, their 'concrete experience' in Kolb's terms.
- Stage 2 Interrogation of the Brief: ordinarily the 'concrete experience' on which designers base their responses remains opaque and if limited or prejudice may hinder the positive development of proposed solutions. By consciously interrogating each element within the definition of the brief,

by 'analysis', 'synthesis by reflection' and 'evaluation' of the influential factors, inaccurate assumptions may be challenged and any detrimental effects reduced. The reflective response to negotiating the criteria proposed within the brief should challenge the designer and client to examine their assumptions and the validity of their reasoning. This process may be enhanced by interaction with expert users with diverse backgrounds and different expectations and experiences to designers.

- Design Oscillation: the creative centre of the design process. By improving the quality of information used as references within the design oscillation 'solution poverty (Ward 1984, p.229)' from a limited or inaccurate range of experience may be reduced and more positive responses proposed.
- Stage 3 Internal Testing: this is the evaluation phase for the proposed solution within the criteria identified by the brief. Again conscious reflection through 'analysis', 'synthesis' and 'evaluation' are completed. The internal testing phase should be as rigorous as when interrogating the brief, specifically aiming to challenge the validity of any guiding assumptions. Again, expert users may provide valuable assessment of the proposed solutions. Reflection translates the experience of the design process and 'assimilation' of the information used towards 'accommodation' and change in the designer's future behaviour.
- Stage 4 External Testing: at this stage the design process has largely been completed, however, it is important to revisit the original conception of the design brief to ensure positive and inclusive criteria and the implication of these criteria have been considered. Through the design process and completion of the reflective processes, the designer has experienced how to enrich and validate their range of references, but for the experience to change future behaviour the designers understanding must also change, translating the experience into transferable knowledge. Acquisition of transferable knowledge repays the designers investment in the enhanced process of interrogation used to challenge and interrogate assumptions.

**Reflecting on the Proposed Model.**

Simplified models have efficiency in creating perceptions of clarity. However, following the reflective principles discussed, this paper proposes considering

the limitations and advantages of this model as the basis for further discussion and identifies issues within the author, the model and the designer's perceptions of need.

Firstly, the author. Models often, if unwittingly, reflect the author's views, the whole process is seen with the organiser's viewpoint, how the process is organised, what happens in every phase. The main goal of the model, as with much research: 'is to get the answer to the questions: What? Who? and How? (Anttila 2000, p.190).' By consciously incorporating reflective phases into defining the brief and testing the proposed solutions the model encourages the designer to repeatedly ask What? Who? How? but also Why? Moving the focus from the author's perspective to expose the assumptions on which the designer bases their knowledge and subsequent design actions.

Secondly, within the model itself. Although stages 2 and 3 propose consulting expert users there is the potential to interpret the design process as a 'closed system' which, conversely, limits opportunities to consult users. In this scenario, the sensitivity of solutions may be jeopardised as conceptions of design problems guide conceptions of design solutions, and therefore, both rely on the accuracy of the initial conception. If consumer needs differ from those of the designer, conceptions of design problems must be challenged prior to considering the appropriateness of design solution (Wright 2003).' However, in addition to proposing direct involvement of expert users, the model overcomes these limitations by providing opportunities for reflection. In the same way as Moon observes: 'the description of reflection in terms of phases might be useful for facilitating reflection, while not necessarily being representative of what goes on in the brain (Moon 1999, p.35).' The model offers strategic opportunities, within the design process, where a more reflective approach may be most influential in challenging conceptions of design as a 'closed system'.

Thirdly, whose needs are considered when, where and why? When perceptions of 'need' are contested they may become dependant on the position of the designer. 'If the definition of need is not deconstructed, the ... solutions will remain either limited or flawed (Fry 1992, p.43).' Similarly, if the designer does not deconstruct their perception of need, then

'assimilation' of new information with which to enhance their understandings, may be limited and 'accommodation' to new patterns of behaviour resisted. The model proposes reflection provides opportunities to make explicit many assumptions that ordinarily remain implicit and an opportunity to consciously observe the development of understanding as experience is translated into transferable knowledge. The model does not assume that: 'the process of learning perpetuates itself (Moon 1999, p.25).' Internal and external testing of the proposed design solutions removes the implicit assumptions of 'accommodation', and learning as a consequence of 'assimilation', to make explicit the positive desire to translate information into transferable knowledge and a change in future behaviour. Anticipating and countering Norman's observation that: 'things that are not conscious – that are "implicit" – are things ignored (Norman 2003, 130).'

As design grapples with what might constitute social responsibility and professional practice within consumerist societies, critical reflection offers opportunities to question assumptions, consider alternative perspectives and expose the implications of power relationships. The value of critical reflection is, perhaps, that it shifts the emphasis from perceptions of efficiency based on short term savings, from narrow responses to design briefs that merely rework variations on known themes. To considering the implications and opportunities within the ambiguity of the design process and the choices we make from the multitude of potentially influential factors. Critically reflective design can make a positive contribution to the search for solid and well-grounded knowledge, not by providing more solutions faster but rather by proposing a method which prompts questions that challenge assumptions and interrogate the implications of 'solutions' in a world of finite resources and increasingly unequal and contested claims to 'need'.

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# Utilising Different Learning Styles to Develop Curricula, Teaching and Learning in Design.

**Kathryn Hearn and Elizabeth Wright**

Kathryn Hearn, Course Director BA (Hons) Ceramic Design,
Central Saint Martins College of Art and Design, University of the Arts London, U.K.

Elizabeth Wright, Associate Lecturer in Research,
Central Saint Martins College of Art and Design, University of the Arts London, U.K.

**ABSTRACT**

This paper considers the development of project-based curricula, teaching and learning within BA (Hons) Ceramic Design, Central Saint Martins College of Art and Design, University of the Arts London, England. BA (Hons) Ceramic Design is a unique undergraduate ceramics course in a national and international context because its focus is on design through ceramics. The course has established and developed its philosophy since 1991 and during that time the course team have become acutely aware of different student learning styles and how this is expressed through design. Student learning is achieved through experiencing a range of design practice and methodologies and names three key methodologies, by which individuals can usually be identified and from which projects are constructed;

- *Design by Project* – is ideal for those who enjoy distinct parameters, the design process perceived as linear with specific points of delivery and outcomes.
- *Design by Concept* – is a more flexible approach and is about building the framework for design thinking and is highly reflective and research based.
- *Design by Practice* – is a more typical ceramist's approach for those who enjoy the process, the making experience and the intrinsic qualities of objects.

These descriptions are not exclusive and often overlap but the articulation helps students to value their own design process whilst being able to use other methodologies in differing circumstances.

From a theoretical perspective, it is interesting to note how these methodologies intuitively recognise theories of multiple intelligence (Gardner 1999) and learning styles (Lamers 2004). This paper draws on these principles and those underlying theories of the design process (Cross 1984; Lawson 1990), reflective practice (Schon 1983; Moon 1999) and experiential learning (Kolb 1984), to inform the development of curricula, tutorial support and student learning.

**Key Words**
Learning styles, contextualised experiential learning.

## 1. BA (Hons) Ceramic Design, Central Saint Martins College of Art and Design, University of the Arts London.

This paper proposes that whilst creative tutors within BA (Hons) Ceramic Design have intuitively developed innovative projects, sensitive to different learning styles, these may be developed explicitly within the curricula by integrating theory into practice. Using ceramics as the focus of the case study locates the discussion within a rich tradition of craft based design, which has embraced the industrial consumer context and issues familiar to a range of design disciplines. Thus enhancing teaching and learning to contribute to design as a discipline within the broader demands of knowledge economies. BA (Hons) Ceramic Design is unique nationally, offering a specialist design-led experience in the context of the broad subject of ceramics.

Ceramics is both one of oldest and newest material technologies demanding the understanding and translation of an individual material, which has an intrinsic identity, points of reference, history, social and cultural meaning and a highly idiosyncratic, physical behaviour. Working and designing with ceramics requires both an intellectual and tangible understanding of its typology, meaning and technologies. As a fundamental, the course curriculum enables students to 'learn by doing', to design and translate ideas in ceramics, based on a hands-on experience and understanding of clay.

For the last twenty to thirty years, ceramics has tended to fit into one of two main categories: 'functional' and 'non functional', which could be subdivided broadly into hand produced pottery and art objects on one hand, and industrially produced, functional tableware and giftware on the other.

However, media coverage and the consumer hunger it creates for affordable lifestyle objects and products have had a significant influence on ceramic design and manufacture. Manufacturing industries have had to learn to be more responsive to market trends and to manufacture products quickly and with greater flexibility. In comparison to other industries, ceramic production costs are now relatively moderate, and individuals and retailers are able to gain manufacturing opportunity very easily. A new 'middle market' of well designed homeware both functional and decorative, aimed at aesthetically aware buyers has emerged, with entrepreneurial individuals such as Ceramic Design graduate Kathleen Hills, (Multi), and companies such as Yo Yo Ceramics leading this new territory.

Like this new generation of designers, Ceramic Design actively seeks commercial parameters for the course, with students exploring market, technique, production process, time to market and cost. The course sees the relationship between user, audience, material and context as vital to functional ceramic design irrespective of whether the outcome is a lifestyle product, an architectural or site-specific commission, or a bespoke client-commissioned artefact.

Against this new, market-driven arena, social, cultural, ethical and ecological issues are increasingly important. The course aims to offer a student experience that combines a knowledge and understanding of ceramics, design skills and abilities, market and manufacturing awareness with social and ecological responsibility. The curriculum is offered through a range of learning styles that relate directly to professional models of practice. Theoretical curriculum elements are embedded and linked directly to the design activity, enabling students to question, articulate and present ideas in the context of set and self initiated projects. The course has good links with a range of external affiliates, including individuals and companies such as Habitiat, Viaduct, Ben and Jerry's and the Conran Shop, and a history of successful and ambitious collaborative projects, for example, the London Garden Show. The course team continually seeks to extend these contacts to link with and underpin the currency of the curriculum.

The course team is rigorous in reflecting on the overall student learning experience and the changing external picture against which the course operates. Although the number of applications suggests that there is a diminishing interest nationally, in ceramics as a specialist area of undergraduate study, Ceramic Design has maintained its position in attracting a large market share for the last three years. This is in part due to the student-centred focus of the course, which enables students to identify strengths and extend them, address weaknesses, and realise individual aspirations. The high profile staff team has unique subject expertise and is actively involved in current professional practice and research. The profile and success of Ceramic Design graduates are becoming increasingly influential in this specialist but important area of design, for example Samantha Dickinson (Phorm), Jay Townsend (Bakebean), Diffuse, Ian Stallard and Jo Whiting.

The course continues to build on this success, offering a life-long learning approach to the acquisition of skills and knowledge, enabling students to develop the essential transferable skills necessary to enter a wide range of employment and self-employment opportunities.

## 2. Course Rationale

The course is unusual at undergraduate level in that it is focussed on *ceramic design* where the relationship between user, audience, material

and context are vital to its application of functional design. This is interpreted broadly, embracing utility and decorative function.

Students engage with numerous types of creative practice and contexts. These can be characterised, at either end of the practitioner spectrum, as applied product designers who design and produce highly refined products, which consider social, cultural and lifestyle choices, market forces and manufacturing opportunities, through to expressive individual makers, who are informed by craft and create bespoke artefacts. Between these lie design practice, which could be interior design and public architectural or site specific design.

It is vital that the practitioner has the confidence to interpret design from a deeper understanding of one particular discipline and acquire the ability to sensitively translate ideas through the medium of ceramics. Thereby appreciating that all materials have their own typology, meaning and technology, and require both an intellectual and tangible understanding rather than just their appropriation.

This creative journey can be an extraordinary challenge and a joy. Student success can be achieved through the understanding of the design's context, materiality and function, the awareness of an individual's learning approach, personal expression and aspiration, in relation to someone else's need or particular audience. This will demand in a student the ability to take risks, employ flexible and lateral thinking, the appreciation of 'designing through making'. The course is student centred whilst also framed to explore learning styles in relation to professional models of practice.

In the 21$^{st}$ century a good ceramic designer is required to understand and appreciate the breadth of design territories, artistic and ceramic practice and challenge how those boundaries might be breached at an emotional, strategic, entrepreneurial and commercial level. The nature of ceramic design enables a designer to manufacture individually and in batch production whilst also working within client driven and higher volume contexts. The professional ceramic designer may operate as an individual designer/maker, freelance designer, as an entrepreneur and consultant or as part of a design team, collaborating with other designers from different disciplines or with architects and planners. The course seeks to engage with and enrich this debate and create opportunity within a highly structured programme, which at the same time preserves, questions and extends the discipline with ambitious collaborative projects within the creative industries.

These distinctive features encourage the student to reflect on and communicate their ambitions and concepts with focus and vision. Individual aspirations are supported and encouraged by a high profile staff team with unique subject expertise who are actively involved in current professional practice and research.

Building on the Universities excellence in research in teaching and learning, the course integrates research into studio practice to encourage the ethos of lifelong learning and diversity.

### 3. Learning Styles, Strategies and Skills

The student profile for Ceramic Design is diverse, there has been a steady increase of students recruited from a wider ethnic diversity, from 33% in 2002 to 40% in 2004. Whilst the statistics indicate a wide range of entry qualifications and experience widening participation as students come from increasingly diverse routes, from 27% in 2002 to 79% in 2004.

Diversity is welcomed and encouraged as it brings a vast range of experience to the student body. However, diversity creates its own challenges as the conceptions of learning and design may also vary greatly. Ceramic Design does not ignore such differences, or dogmatically equalise conceptions but rather recognises that such differences reflect a range of learning styles, strategies and skills. This philosophy contributes to the course aims of progressively shifting student conceptions from a potentially surface learning approach utilised within short term examination contexts, to deeper learning developed and used strategically to support transferable skills relevant to a range of professional contexts. The graduation prospects from Ceramic Design supports the value of this approach with a healthy progression of graduates onto a varied range of MA courses. Whilst the first employment statistics are very good, with more than 57% of graduates in 2004 already achieving employment in either ceramic design or in the wider creative industries.

So what does 'learning style' mean within the Ceramic Design context? 'A learning style is a deep-routed preference an individual has for a particular type of learning (Adey 1999, p.2),' a preferred way of doing something. However, learning skills and strategies compliment these styles:
'Learning Skills are almost like 'tricks' which are specific, designed to do one job and can be taught. ...
the term Learning Strategy is used for a group of skills which a learner uses together for a particular purpose. ...
There is no sharp dividing line between learning styles, strategies and skills. They form a continuum from the general deeply embedded (and possibly innate) styles at one end to the teachable subject-specific skills at the other (Adey 1999, p.2).'

However, Adey et al identify two dilemma associated with an over enthusiastic emphasis on teaching and learning focused on particular learning styles. Firstly, the teachers dilemma, that focus on one style may become disabling if it is at the expense of other ways of learning. And secondly, the learners dilemma, that they may acquire a limited view of their own capabilities. The solutions proposed is NOT to teach to a

style but rather: 'students need to learn both how to use a variety of styles, and to understand the dangers of taking a limited view of their own capabilities (Adey 1999, p.36).'

In Ceramic Design three learning styles are defined,
• *Design by Project* – is ideal for those who enjoy distinct parameters, the design process is perceived as linear with specific points of delivery and outcomes.
• *Design by Concept* – is a more flexible approach and builds a framework for design thinking which is highly reflective and research based.
• *Design by Practice* – is a more typical ceramist's approach for those who enjoy the process, the making experience, the intrinsic qualities of objects.
These descriptions are not exclusive and often overlap but the articulation helps students to value their own design process whilst being able to use other methodologies in differing circumstances.

From a theoretical perspective, it is interesting to note how these methodologies intuitively recognise theories of multiple intelligence (Gardner 1999) and learning styles (Lamers 2004). However, Adey et al draw attention to Gardner's scepticism for the idea of a general learning style, although they point out he suggests: 'that different pupils learn in different ways, some learning better using language skills, some using spatial information and others using quantitative representation (Adey 1999, p.16).' So whilst theories may differ, the practical application has value and certainly this has been the experience for teaching and learning in Ceramic Design.

## 4. Learning Styles and Ceramic Design Practice

Students who undertake Ceramic Design are, by their nature, a self-selecting group who may share preferred learning styles. However, within this general concept there are subtle sub-divisions of preference associated with specific skills required by Ceramic Design. It is, perhaps, at this point of assumed shared knowledge, where misconceptions in expectations of learning and design by the student and teacher have most potential to limit student development if left unexposed (Davies 2001). It is essential for both students and tutors to reflect on their understanding of their knowledge and expectations and the impact that each may have on the other (Webster 2002). This reflective process is essential to effective learning but also has implications within the professional design context where efficient communication between designer and client is vital (Olson 2000).

Learning styles, in Ceramic Design, recognise a range of approaches and offer a simple method by which to make differences transparent and understandable within a shared language. Language is increasingly recognised as an important part of the design process where talking has

been shown to actively contribute to the design process (Tomes 1998). Helping; 'clients to interpret shades of meaning not allowed by drawing (Lawson 1997, p.175, describing Eva Jirincna's client negotiation).'

By recognising differences in preferences and expectations and by developing a language with which to discuss the associated concepts, Ceramic Design learning styles extend the value of individual strategies used to enhance the design process. It is this focus on developing design sensitivity within the ceramic context that defines Ceramic Design. There is a shift in the balance of activity from principally 'ceramics' and learning through doing, to 'design' which anticipates the reception of the product within a defined context. 'Traditional ceramic' teaching and learning has to change to embrace the design dynamic and it is this repositioning that enhances awareness and development of transferable skills.

Design thinking requires Ceramic Design students to speculate on a range of perceptions other than their own, clients, production managers, buyers and end-users. Anticipating alternative definitions of need requires extending knowledge beyond a personal range of experience if designers are to avoid 'solution poverty (Ward 1984, p.229)' from reworking a limited range of known exemplars. Balancing different needs and making sense of complex processes requires flexibility and dexterity manipulating the ambiguity at the heart of the design process. For as Buchanan observes: 'the problem for designers is to conceive and plan what does not yet exist (Buchanan 1992, p.18).'

The learning styles developed by Ceramic Design help students to plan for 'what does not yet exist' by providing accessible methodologies based on their preferred leaning styles. Requiring conscious decisions about the methods used prompts students to reflect on the impact of their learning style and negotiate within the studio context with knowledge of different learning styles. This conscious awareness of design methods shifts the onus of learning from passive students reliant on tutors for guidance, to emancipated learners who actively reflect on the impact of their actions. This concept of self-reliance is harder for some students than others, some find it liberating whilst others feel less comfortable taking responsibility for the impact of their actions.

Reflection adds value to learning and the design process because as Moon defines, reflection is: 'a mental process with purpose and / or outcome in which manipulation of meaning is applied to relatively complicated or unstructured ideas in learning or to problems for which there is no obvious solution (Moon 1999, p.161).' This definition echoes descriptions of design problems which often remain ill defined and, therefore, resistant to complete analysis. Whilst resistance to complete analysis may provide problems for which there are no obvious solutions it does not mean that solutions are not designed. It may however, explain the limited interrogation of the design process by designers and the

frequent description of design as an intuitive activity, which is resistant to analysis.

Reflection enhances the design process by consciously interrogating the information and assumptions on which design decisions are made. Previous experience becomes transformed into transferable skills as they are connected to future actions by the reflective process. Deeper learning occurs as actions become linked and value is acknowledged within the process of design as well as the product produced. In design, reflective practice was proposed by Schon (1983). However, Cross identified the central creative element of design may be described as an: 'oscillation between sub-solution and sub-problem (1997, p439).'

The creative oscillation, at the centre of the design process may be enhanced by developing reflective interrogation of the information used to define the design problem and assess the value of proposed solutions (Wright 2004). Viewing this process as similar to the experiential learning cycle proposed by Kolb (1984), the creative oscillation can be conceived as central to a consciously reflective design cycle (Wright 2004). Ceramic Design's learning style methodology extends these activities from potentially an inward interrogation of personal practice, to a powerfully strategic tool with which to negotiate alternative perspectives within the broader design context and from within a critically reflective framework. For as Friedman observes: 'it is not experience, but our interpretation and understanding of experience that leads to knowledge (Friedman 2000).'

## 5. Integrating Theory into Practice

Ceramic Design incorporates this ethos throughout the course structure and strategies. The course consists of three stages, each of which is self-contained in that the marks from one do not carry forward to the next. The first stage explores the craft of ceramic design, including knowledge and skills in the use of materials. The second stage explores how the craft is the basis of *functional* design *for* a particular audience, *within* a particular context, and *from* a particular material base. The final stage develops the confidence with which craft and design abilities are harnessed in two significant projects that are determined individually. The curriculum is organised as follows:

- Concepts and components (stage 1);
- Ceramics in context (stage 2); and
- Personal language, professional context (stage 3).

Learning styles relate to these key stages in a progressive development of the students understanding.

The first stage encourages the student to personally express themselves with learning skills and acquiring technical expertise within a defined precedence. For example, an historical or contemporary context that acknowledges the power of their personal vision and aspiration. The

academic staff's professional practice is drawn upon as indicative role models.

In Stage 2 students are encouraged to acquire professional distance by interrogating the value of the different learning styles in relation to their own and others practice. This is enhanced and contextualised by the integration of study trips to industry and the commercial sector. Personal parameters are defined within competitive engagement in The Royal Society of Arts Student Design Awards and validated within professional experience.

Stage 3 draws on the experience of the preceding stages to refine individual learning styles within the newly acquired knowledge and confidence of an emancipated designer. By this stage, Ceramic Design students are reflective and analytical practitioners who can locate their practice within a critical context and who strategically integrate theory into practice. This is achieved by wide ranging research, which raises awareness of social, cultural and ethical imperatives. The theoretical elements of the course are embedded within the design practice of the individual enabling graduates to be able to articulate their critical attitude and position coherently. The ability to communicate effectively, visually and verbally with specialist and non-specialist audiences, is continually tested by presentations contextualised by design methodologies derived from personal learning styles.

The integration of theory and practice in Ceramic Design is consistently referenced within the context of professional practice. This is, perhaps, most apparent within the 'Client Project, Design for Specific Location' in Stage 2, where an over riding theme is established and between four and five clients are identified, each embracing differing perspectives on the central issues. In 2005 the speculative clients will be Southwark Cathedral, WaterAid, Traidcraft, Amnesty International and Pi3 Packaging Innovation within the theme of *'Responsible Design.'* For example, in Traidcraft's perspective the student design consultancy will construct and deliver a working methodology of the designer's relationship with manufacturing in the developing world for sale by a consumer orientated retail client. Of specific interest, is Traidcraft's brief to designers to devise a working methodology, based on their accumulated knowledge of learning styles and professional practice, to integrate Traidcraft's international consultancy with local traditional practices. The designers must understand a range of cultural contexts, the market, the client and the manufacturing base. Whilst the students adopt an identified learning style as a methodology for the project, it is vital that they do not assume knowledge and respond intuitively but rather critically analyse the context to construct a reflective framework for their proposed solutions. Working in a team forces negotiation and understanding of different approaches whilst maintaining personal design integrity. This project illustrates the philosophy of Ceramic Design, that designers should be ethically aware, in a world where perceptions of

need are contested (Fry 1992) and increasingly design must recognise its responsibility to the consumer culture within which is operates.

## 6. Conclusions

Project-based learning is a familiar element in the curricula of many design institutions within the United Kingdom. The 'design project' is conceived as a simplified simulation of working practice, originating from the apprentice system of master and pupil. However, within the context of mass consumption, the products of studio practice have evolved from hand made bespoke pieces, to incorporate design for industrialised mass production. Similarly, the role of design education has rapidly expanded and within the UK this trend is set to continue as government initiatives aim to encourage fifty percent of eighteen to thirty year olds to enter higher education by 2010. Expansion of design education has lead to more designers being educated than can reasonably be expected to work specifically as designers; shifting the emphasis from education for design, to education through design. This development has been encouraged as the flexibility and creativity of design offers many transferable skills to an increasingly complex and innovation driven socio-economic environment. Together these trends, for higher student numbers, recognition of the value of design thinking and of the needs of changing industrial societies have lead to a re-evaluation of curricula, teaching and learning.

In a lifetime, the professional employment opportunities of Ceramic Design graduates will be plural and they recognise the value and transferability of their skills to inform other design contexts and creative industries. The essence of learning styles in Ceramic Design is empowering students to become emancipated designers who understand their personal design process, are strategic, critically reflective and appreciate the increasingly complex consequences of their design decisions within a continually changing world.

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**Enhancing Curricula 3: contributing to the future, meeting challenges of the 21st Century in the disciplines of art, design and communication. Lisbon -2006**

**Title:** 'Traditional Practice a Contemporary Challenge?'

**Authors:** Elizabeth Wright and Kathryn Hearn.

**Institution:** This project is supported by Central Saint Martins College of Art and Design, University of the Arts London.

**Theme:** Pedagogy for employability, conceptual paper.

**Key Words:** Hands on practice, design through making and reflective practice.

**Abstract:**

Within United Kingdom (U.K.) government aspirations for fifty percent of 18 – 30 year olds to continue into higher education, art and design institutions are faced with the practical and ethical challenges of incorporating many more students into studios designed for the traditional requirements of practice based disciplines. Computer aided design and the lure of the virtual world has, to some extent, reduced the pressure on physical space. However, to maintain the integrity of studio based disciplines, a reconsideration of the value of 'hands on' practice is required to avoid literally losing touch with the subject. BA Ceramic Design, at Central Saint Martins College of Art and Design, has completed this process within the requirements of re-validation into a credit framework. This paper discusses the progression from defence of a discipline, often conceived as craft orientated and perhaps, outdated in a global economy, to reinvigoration through recognition of the value of learning through the tactile and cognitive experience of three-dimensional design. Specifically, this paper discusses how, by a process of critically reflective analysis, Ceramic Design has defined the transferable assets offered by the course to students who may be expected to apply their learning within a range of professional practice.

This move, to careers that incorporate many different forms of employment within a lifetime of practice, reflects a significant change in social expectations. Ceramic design, as one of the oldest and newest technologies, offers a unique

case study through which to explore these issues. Ceramics design requires understanding the translation of an individual material, which has an intrinsic identity, reference, history, social and cultural meaning and an idiosyncratic physical behaviour. Many of these characteristics may be familiar to other studio-based disciplines. However, Ceramic Design has refined the curricula to recognise a range of learning styles that relate directly to professional models of practice. Student learning is structured through experiencing a range of design practice that identifies three key methodologies;

- *Design by Practice* – typically considered a more traditional ceramist's approach, focuses on the making experience and the intrinsic qualities of object and materials.
- *Design by Project* – the design process is conceived as having distinct parameters with specific points of delivery and outcomes.
- *Design by Concept* – highly reflective and research based, focusing on building a framework for design thinking.

These descriptions are not exclusive and often overlap but the articulation helps students to value their own design process whilst being able to use other methodologies in differing circumstances (Hearn and Wright 2005).

Whilst this approach developed via critical reflection within the course philosophy, it is interesting to note how these methodologies intuitively recognise theories of multiple intelligence (Gardner 1999) and learning styles (Lamers 2004). This paper considers theories of the design process (Cross 1997; Lawson 1990), reflective practice (Schon 1983; Moon 1999) and experiential learning (Kolb 1984), to propose making explicit those factors that are often described as implicit. Interrogating the implicit values of studio practice offers valuable contributions to the challenge of designing curricula to satisfy the changing expectations of employment.

**Objectives:**

Within the U.K. project-based learning is a familiar element in the curricula of many design institutions. The 'design project' is conceived as a simplified simulation of working practice, drawing on traditional models of the apprentice system of master and pupil. However, within industrialised production, products designed within studio practice have evolved from hand made bespoke pieces, to satisfy the needs of mass consumption. Similarly, education has reflected this development and has rapidly expanded within the U.K. Today, many more

designers are educated than can reasonably be expected to work as designers. There has been a shift in the emphasis from education for design, to education through design. This paper proposes a re-evaluation of learning through making, as it is recognised that this process offers many transferable skills, to an increasingly complex and innovation driven socio-economic environment.

This re-evaluation of practice-based skills may seem ill conceived when manufacturing in the U.K. is in decline and significant sections of production for the ceramics industry has moved offshore. However, ceramics as the focus of the discussion locates it within a rich tradition of craft based design, which has embraced the industrial consumer context and issues familiar to a range of design disciplines within the broader demands of knowledge economies. The diverse range of skills developed within studio practice emphasises tactile appreciation and dexterity associated with hands on practice. However, excellence in these areas is often described as though these are intuitive responses to materials, rather than recognised as skills acquired through practice. In Ceramic Design these cognitive and tactile skills are refined within the curriculum, which has developed to acknowledge a range of learning styles that relate directly to professional models of practice. *'This philosophy contributes to the course aims of progressively shifting student conceptions from a potentially surface learning approach utilised within short-term examination contexts, to deeper learning developed and used strategically to support transferable skills relevant to a range of professional contexts* (Hearn and Wright 2005)*.'*

'Learning styles' within Ceramic Design refers to *'a deep-rooted preference an individual has for a particular type of learning* (Adey 1999)*,'* a preferred way of doing something. However, in Ceramic Design we do not simplistically evaluate students as particular types of learners, or allow students to identify themselves in these terms. Rather, *'students need to learn both how to use a variety of styles, and to understand the dangers of taking a limited view of their own capabilities* (Adey 1999)*.'*

In Ceramic Design three learning styles are defined, *Design by Practice, Design by Project and Design by Concept.* Understanding different perspectives is important as Ceramic Design students are, by their nature, a self-selecting group who may, therefore, share preferred learning styles. Assumptions, by students

and tutors, of shared knowledge and expectations of learning and design, may limit student development if left unexposed (Davies 2001). Both students and tutors must reflect on their understanding of their knowledge and expectations, and be aware of the impact that each may have on the other (Webster 2002). In Ceramic Design developing a critically reflective perspective is essential to effective learning within studio practice, not least because of the implications within the professional design context, where efficient communication between designer and client is vital (Olson 2000). This may become increasingly important if, as predicted by 2025 we: *'will hold an average of 19 different jobs during [our] lifetime* (Press Association 2004).'

Learning styles in Ceramic Design offer a simple range of methods through which to frame different styles of practice. Using this methodology students and tutors develop an increasingly vibrant vocabulary of design descriptors through which to interrogate the design process. Students are encouraged to explore their practice through visual, oral, tactile and theoretical perspectives. Using these strategies and learning styles within defined projects, students become aware of the range of variables within the design process. With practice, approaches to projects acquire a strategic flexibility as students move between different strategies and methods. Student thinking progresses by oscillating between conceptions of the sub-problem and sub-solution (Cross 1997) as they continually re-evaluate their projects through two-dimensional drawings and three-dimensional artefacts, whilst considering the value of theory to practice, and anticipating consumer needs. Students learn to re-conceive their practice and consider the implications of their actions. Conceptions of Ceramic Design as essentially 'ceramics', and learning through doing, incorporate 'design' which anticipates the reception of the product within defined contexts. Recognising the design dynamic repositions the development and awareness of the value of transferable skills within changing expectations of professional practice.

*'It is vital that the practitioner has the confidence to interpret design from a deeper understanding of one particular discipline and acquires the ability to sensitively translate ideas through the medium of ceramics. Thereby appreciating that all materials have their own typology, meaning and technology, and require both an intellectual and tangible understanding rather than just their appropriation* (Hearn and Wright 2005).'

Design thinking requires students to consider the perceptions of a range of perspectives within the design process, clients, production managers, buyers and end users. Valuing different perspectives requires flexibility and dextrous thinking to acknowledge the ambiguity and opportunity at the heart of the design process, where: *'the problem for designers is to conceive and plan for what does not yet exist* (Buchanan 1992, p8).' Through the process of making, and the challenges of acquiring the required cognitive and tactile skills, Ceramic Design students come to understand this paradox within design. Reflecting on the process of their practice students learn to take responsibility for their progress and plan to achieve their potential. Conscious awareness of the value of design methods shifts conceptions of learning from passive students reliant on tutors, to emancipated learners aware of the impact of their actions on the products of their practice.

However, reflection is not a natural process for all students, or tutors, and requires conscious effort. For as Moon defines, reflection is: *'a mental process with purpose and / or outcome in which manipulation of meaning is applied to relatively complicated or unstructured ideas in learning or to problems for which there is no obvious solution* (Moon 1999, p.161)*'.* In the abstract this can be a difficult concept to grasp. However, by considering the reflective process within practice, Ceramic Design students learn these principles through a tangible conversation with materials, contextualising their practice through the design dynamic. Using learning styles within practice, Ceramic Design students become reflective practitioners (Schon 1983).

Learning styles and design methods in Ceramic Design encourage an explicit acknowledgement by students that for learning to occur they require more than experience alone. For as Friedman observes: *'it is not experience, but our interpretation and understanding of experience that leads to knowledge* (Friedman 2000).' Ceramic Design students learn that reflective interpretation and understanding of their experience is an essential skill if they are to thrive within a lifetime of changing professional practice.

**Reflections on Practice:**

This process of reflective interpretation is fundamental to the development of the course and in 2004 Ceramic Design integrated this process within re-validation and unitisation. Through this process the course team had to explicitly

interrogate areas of practice often considered implicit within the discipline, and re-establish the values and expectations jointly held for Ceramic Design. Clarification acknowledged that design teaching, as with design practice, requires a flexibility and dexterity in thinking and actions similar to those we desire in students. Discussion into learning style terminology allowed the tutors to avoid the dangers of assumed understanding. Tutors experienced first-hand the challenges of defining the value of and defending studio practice within contemporary design education. This process of critical reflection positively contributed to the tutors understanding of the value of reflection to design and education (Wright and Payling 2004) (Wright 2004), (Wright 2005). More specifically, within the context of Ceramic Design, this development was interrogated and disseminated by the authors at the International Conference on "Design Education: Tradition and Modernity, (DETM)." National Institute of Design (NID), Ahmedabad, INDIA (Hearn and Wright 2005). This reflective process has continued with this paper, however the focus is now turning to test the value of these reflections within the progression of students into professional practice. Although the philosophy of Ceramic Design has only recently become more formally stated within the course documents, it has developed informally over a longer period of time. It is, therefore, possible for some initial consideration of the impact of these issues within the professional practice of graduates.

As part of the ongoing development of Ceramic Design nine graduates, from the past three years, were asked to consider:

- their professional design process against the three methodologies proposed by Ceramic Design,
- their standard working process,
- the role of hands on three dimensional processes to their practice, and
- any particularly informative experiences to date.

The majority of graduates considered the ability to conceptualise and make as very important to their professional practice. Judith Schachermayer spoke of using all three design methodologies in her practice:

*'I would say [I use} all three of them ideally; when I work for myself I enjoy designing by concept. Then when making the models, design by practice is always naturally involved. In my job it's more design by project (Schachermayer 2006).'*

Whilst Fay de Winter considered the design method used depends on the:
*'circumstance, all three approaches can be applied, for example commissions require design by project, whereas an exhibition piece leans more towards design by concept. For my own personal work and development I like to design by practice, evolving through a flow of ideas and inspirations (Winter 2006).'*
It is interesting to note that both Judith and Fay do not feel defined by the methodologies but rather, use them strategically within different contexts.

When asked to describe their standard working process, the responses reflected a more personal perspective. Most recent graduate, Julie Halpin appreciated the value of continual learning and considered her process as:

*'Varied and under development (Halpin 2006).'*

Whilst Aiga Siceva observed the professional pressures of practice:
*'Half my time is spent on paper work – preparing materials for shows, exhibitions, researching and ordering materials, photo-shoots of work, preparing statements etc. and half my time is spent actually making (Siceva 2006).'*
Hannah Padgett considered her process in terms of the objects produced:
*'I decide on a functional object and explore the social, interactive and physical issues surrounding it. I try to exploit the intrinsic qualities of ceramic material in decoration and form ... (Padgett 2006, specialist in terracotta).'*
Whereas Simeon Featherstone specified:
*'My process is wall-based ceramic tiles, which are specifically designed for a given space and offer an individual, aspirational outcome. The works are originally designed using sketches and cad programmes to gain accuracy when producing a tessellated pattern. This is then modelled in plaster to gain a three-dimensional quality and finally press-moulded using a stoneware body (Featherstone 2006).'*

All the graduates regularly used their making skills in their professional practice and expressed a fluency and range of practical processes:
*Once I have arrived at a 2-D design I move into the maquette stage, which will normally begin in paper or card and then I move into plaster which I will either machine or carve by hand. Once the basic form is realised I might make plaster or clay samples of textured surfaces, decoration, colour and surface quality. Normally I work with slip casting so once I am satisfied with my final design a plaster model is produced in order to make a mould, which I will eventually cast from (Padgett 2006).'*

Whilst hands on skills are central to their practice, Ceramic Design graduates have a contemporary understanding of the full range of studio methods, as Judith reflected:
*'For my last project I had to sculpture a bird, I did this by hand. It was a nice change not to use the computer. Several models were made out of different materials. First Wax then Plaster and then Perspex. Normally all the 3D models are made by computers (Schachermayer 2006)'.*

The philosophy of recognising different design methodologies appreciates, and is sensitive to, alternative cultural perspectives and professional opportunities. For example, Maham Anjum is in the process of developing products in Sri Lanka:
*'using traditional hand made skills that have a relation to today's western consumer (Anjum 2006).'*

When asked for influential experiences Maham considered the qualities of:
*'Artisan hand made pottery. I like the challenges and simplicity that hand made pottery expresses and the functionality of those objects in their original and new contexts (Anjum 2006).'*

Ceramic Design embraces difference and incorporates a positive attitude to change and a flexibility and resilience in thinking styles. Rachael Joy reflected:
*'Surprisingly, one of the most influential experiences I have had was when I injured my drawing hand in the third year. It taught me to design out of my comfort zone and to find alternative methods for creating patterns and images. Again, I can apply this in my job now as I do not restrict myself to doing the necessary but challenge my ideas and am willing to take more risks (Joy 2006).'*
Such resilience is perhaps essential, as making the transition from college to professional practice can be a demanding process, as Judith remembered:
*'Once shortly after I graduated I had an interview with a company. I really wanted to work there. The person I had my talk with "took me apart" completely, ... he was questioning every single thing I said. I was really upset after my interview. It took me some time to answer all these questions for myself. But they were essential for me becoming a designer. In the end I never got the job but I am still very grateful for the awakening interview (Schachermayer 2006).'*

**Conclusions:**

Whilst the theoretical side of this research has been considered over a number of years, the practical testing of these issues are still in the early stages of development and so it is too early to make sweeping conclusions. However, even at this early stage, when the average time post graduation for the respondents is only two years, already the nine graduates had each experienced an average of three different occupations since leaving college. In addition, their present occupations ranged from teaching, sole trader, visual merchandiser, assistant designer, head of clay, technician, craft revivalist, ceramic artist and textile designer. It is clear that 'pedagogy for employment' must recognise the vast range of what 'employment' might mean if students are to be equipped to contribute to professional practice.

It may be that those skills implicit in traditional practice might represent a challenge to what is considered accepted orthodoxy, in a global economy where information technology is increasingly the dominant form in design education. However, this challenge is essential, for as Winfried Scheuer observes of many computer aided design tools: *'industrial designers with the latest CAD software programmes claim they can judge which programmes were used by looking at the shapes of modern products such as telephones or computers* (Scheuer 1999).' Losing appreciation of serendipity within the design process and the skills embedded within hands on practice has implication for design, education and employment. The transferable skills of tradition practice have value for everyone who uses and enjoys artefacts, and appreciates the economic and social implications of design in the twenty-first century.

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# Cltad 4th International Conference

**Enhancing Curricula: using research and enquiry to inform student learning in the disciplines**

**3 – 4 April 2008** **Lycee Francais, New York**


Authors: Elizabeth Wright, Kathryn Hearn and Anthony Quinn.

Institution: Central Saint Martins College of Art and Design, University of the Arts, London, U.K.


Disciplines: Craft-based Disciplines, Ceramic and Product Design.

Objectives: Making changes to the curricula as a result of the outcomes of research and other forms of enquiry.

Contribution: Symposia Overview.

Title: **Design Reflection in Action.**

This symposia presents three perspectives on design reflection in practice. The domains of theory, teaching and learning, and professional practice are interrogated for evidence of the value of reflection in action within design practice. These papers seek to identify key relationships between theoretical models, educational and professional practice. By consciously considering each perspective, firstly from its own position, and secondly, as part of a conversation into reflective practice, each has been enriched by the challenge of the others. Using a range of research techniques, that include talking, seeing and touching, the discussions draw on and fully incorporate a visually rich area of practice.

In *'Why Reflect?'*, theories from design, education and critical reflection are drawn together to propose a multi-disciplinary approach to design practice. Acknowledging the rapidly changing professional context within which design is increasingly perceived as offering an alternative and strategic thinking process. The paper asks, what is critical reflection, and what are the benefits to teaching and learning?

The theoretical value of critical reflection in teaching and learning is analysed within; *"Something's not quite right in my minds eye!" Critical reflection on studio practice.* Ceramic Design students are asked to analyse their learning approach in order to select the appropriate tutorial support and then, on a weekly basis, reflect on their progress as learners, and as practitioners. The paper asks do students become more reflective by practising the process, and if so, do they also become better practitioners?

The role of the professional practitioner, the craft of design and reflection within hands-on practice is considered in; *The Need to See; a reflection on the three-dimensional learning process in design.* Here the theoretical and educational concepts of practice are interrogated against the reality of professional practice. Drawing on a range of interviews with leading practitioners, the lure of the virtual world, and impressions of three-dimensional space are challenged by the reality of hands-on experience. The difference between seeing, and being, exposed by critical reflection.

Together these papers seek to challenge the perceptual barriers that often appear to separate theory from practice and institutional education from lifelong learning. By focusing the conversation around Ceramic Design, a subject sometimes considered endangered, these issues take on a resonance and urgency. If we are to avoid outdated assumptions informing the viability of practice, the conversation must be open to incorporate and interrogate the value of practice in all its domains. We propose interrogating the theory, practice and profession of design may create a beneficial cycle where research and enquiry is used to learn from each other and to inform student learning to remain relevant in the twenty-first century.

# Cltad 4th International Conference

**Enhancing Curricula: using research and enquiry to inform student learning in the disciplines**

**3 – 4 April 2008** **Lycee Francais, New York**


Author: Elizabeth Wright

Institution: Central Saint Martins College of Art and Design, University of the Arts, London.


Disciplines: Craft-based Disciplines, Product Design.

Objectives: Making changes to the curricula as a result of the outcomes of research and other forms of enquiry.

Contribution: Symposia; first of three Research Papers.

Title: **Why Reflective?**


**Abstract:**

This research considers the value of critical reflection as an enhanced method of practice within design, taught in post-secondary higher education. This paper proposes that critical reflection, fully integrated into design thinking, may promote a flexible attitude to changing contexts and high levels of evaluative and analytical skills, which are transferable and valued in professional, educational and social domains.


This research is timely as reflection is widely promoted to enhance independent learning as higher education strives to meet international standards, for multi-national students. Similarly, the design profession attempts to balance local sensitivity within a networked global awareness. These issues are important as the design process is increasingly considered as offering alternative ways of thinking (Cross 2007). As design thinking becomes more strategic the impact of decisions is potentially magnified and poor design thinking becomes dangerous and expensive. As a key player in the manufacturing and consumption process, where resources are limited and needs contested, design has to be more responsible (Fry 1992). The way we teach our students influences this process and should do so for the better. The rapidly changing professional world requires a flexible and adaptive approach to lifelong learning. Critically reflective design thinking, as a key skill, is transferable and valued as it aims to identify and interrogate assumptions, demands evidence and incorporates rigorous methods to evaluate findings.

However, an un-interrogated belief in individual creativity and the value of experiential learning may unintentionally restrain tutors from providing explicit guidance. In design, this lack of clarity is often overcome through a shared understanding of a discipline. The essential thinking skills are teased out of intuitive conversations around practice, where understanding is clarified through visual and three dimensional examples.

The effectiveness of relying on intuitive understanding of a discipline is further limited if the tutor and student do not share an equal level of experience on which to draw their intuitive responses. As many tutors are practitioners, and familiar with a reflective mode of practice, they may apply the same principles to their teaching. However, tutors may not fully appreciate the sense of confusion a student may feel trying to develop a reflect stance without explicit guidance as to what this may be, whilst trying to extricate the techniques of reflective practice from tutors who imply, rather than explicitly describe how it may be achieved.

Whilst many of these issues are implicitly considered within teaching and learning, without a shared understanding, relevant to the design discipline and based on explicit and transparent criteria, the effectiveness of the critically reflective process may be questionable. This research asks what is critical reflection, and what are the benefits for teaching and learning design in higher education? Established theories from teaching and learning (Kolb 1984; Gardner 1999), models of the design process (Lawson 1990; Cross 1997), and critical reflection (Schon 1983; Brookfield 1995; Moon 1999), are considered to propose a multi-disciplinary approach (Wright 2004; Wright 2005). Central to this approach is the desire to promote transparent and rigorous methods of design interrogation and evaluation.

This paper, as the first of three, (Hearn 2008; Quinn 2008) questions 'Why Reflective' within the context of design education and practice. The context of design and education are referenced to locate key issues prior to proposing a model for critically reflective practice and reconsidering its value within contemporary education and practice.

**The Design Context:**

A major driver for design is financial advancement. Investment in design is often justified in terms of wealth creation. The creative industries represent 7.3 % of the United Kingdom (UK) economy: *'and are growing at 5 percent per year (almost twice the rate of the rest of the economy)'* (Department for Culture 2007). However, whilst such economic growth is undoubtedly welcome within the UK context, an increasingly global awareness forces us to

take a responsible stance and look beyond local financial benefit to interrogate the basis on which such wealth is derived.

The practice of design is often considered to focus on satisfying 'needs' (Fry 1992). But whose 'needs'? The consumerist societies where products are bought and sold, or those where the materials are sourced and production located? Global awareness forces us to reconsider the concept of 'need' as a driver within design, when 'need' is so clearly contested when viewed from different contextual parameters. Increasingly, global awareness raises the question, what does 'wealth' mean, the freedom to choose, and if so, what is to become of those too poor to share such freedoms? Who decides what gets designed, which materials are used and where manufacturing is based? Addressing these issues is increasingly important, as resources are finite and Chapman tells us: *'Over 90 per cent of the resources taken out of the ground today become waste within only three months'* (Chapman 2005, p.8).

As resources become limited, prices rise and the centres of wealth creation may move from products to services and from country to country. Such increasingly unstable economic conditions contribute to the reality students face. The processes adopted frame understanding of the changing context and shape responses, and therefore, the world created through design. To survive and prosper in this context, students need skills to remain flexible and adaptive. Particularly as government aspirations for fifty per cent of eighteen to thirty year olds to enter higher education by 2010 has lead to a rapid rise in student numbers, from just over 16,000 in 1994 – 1995, to 56,785 students on design courses in the UK in 2003 – 2004 (DesignCouncil 2007, referencing Higher Education Statistics, 2005). *'Students studying full-time on degree courses in art and design account for approximately 6 per cent (60,000) of the total number of full-time undergraduates in the UK'* (QAA 2002, p.3). Whilst this may seem reasonable, against the 7.3% contribution to the UK economy, there may be many more 'designers' competing for employment as designers, than reasonably expected to practice. Professional flexibility is not only preferable but also vital when it is anticipated that by 2025 we will: *'hold an average of 19 different jobs during [a] life time'* (PressAssociation 2004). That is an average of less than two and a half years per job. In such a context, the design process we teach must be transferable, flexible and viable in a range of scenarios. This paper proposes critically reflective practice, integrated into the design process, enhances the ability to meet these challenges.

Why are these issues included in a discussion about reflection? It is because they inform the context and: *'design can only be meaningfully defined for a given context'* (Powell 1997). The success of education, our students and their design practice is context dependent. The context is changing and the ability to understand the implications of change is vital, as it is the context that defines the parameters and criteria against which our students and we will assess success.

The question then becomes; how do we evaluate which are the defining criteria to be considered, and how do we teach skills to remain relevant and effective in a changing context? As understanding is informed by experience, perhaps a first step is to consider those elements that frame our experience and conceptions of teaching and learning in design?

**Central Saint Martins College of Art and Design:**

So what is our context? The authors of these three papers work on BA (Hons.) Ceramic Design, at Central Saint Martins College of Art and Design, London. *'Central Saint Martins was formed in 1989 from the merger of two, much older, colleges: the Central School of Arts and Crafts (founded in 1896) and St. Martin's School of Art (founded in 1854)'* (Central Saint Martins, 2008).

This historic perspective reflects much of the art and design education in the UK.

> *'A significant part of the framework, central principles and traditions of art and design education can be traced back to major developments in the 19th century, when the performance and contribution made by the applied arts (design) to the commercial competitiveness of British industry was first recognised by the State'* (QAA, 2002, p.2).

This history and tradition continue to influence us. Ceramic Design is based at the Southampton Row site, completed in 1906 to house the Central School of Arts and Crafts but located in a newer, additional building formerly used by the Westminster Law School. The Ceramic Design studios look similar to those in the original Central School of Arts and Crafts but have to deal with being a later introduction into a building not designed for this purpose. For example, the studios are on the third and eighth floors. A physical example of how, as the context changes, the past still has implications for future practice. Similarly, traditional methods of teaching and learning continue to inform our expectations and through us to our students. Models of practice, from the apprentice system to the Bauhaus, have contributed to the centrality of three-dimensional practice facilitating a tradition of

reflective practice and learning through the transfer of tacit knowledge, more often implied within the materiality of the process, than from explicit explanations from tutors.

Tutors educated via these methods, with limited explicit guidance, may be unaware of the necessity for explicit guidance. Indeed, tutors may feel explicit guidance may hinder the creativity of responses, assuming creativity will be stimulated by exploration and experience. However, this assumption fails to acknowledge that much of the opportunity to experience studio practice has been curtailed by increased student numbers, pressure on space and a move away from craft centred activities. It is interesting to note that whilst the loss of craft expertise has been acknowledged within the disciplines, the loss to design thinking and the broader social context is less widely discussed.

However, whilst many of the traditional opportunities to develop reflective practice have been challenged, we still talk of 'reflective practice' and ask students to be reflective, without acknowledging the impact of the changing context of teaching and learning. Stripped of the materiality of hands on practice questions what is reflection in a design process where practice is no longer directly informed by material feedback. Where the process is design orientated but not materially defined, what is reflection?

### What is Reflection?

Moon describes reflection as *'a mental process with purpose and / or outcome. It is applied where material is ill structured or uncertain in that it has no obvious solution'* (Moon 1999, p.5). This is not 'reflection' that deceptively mimics reality, as the reflective surface of water. Nor, the narcissistic curiosity of peering in a mirror. In reflection, it is important to take ownership and attempt to understand the implications of personal actions contextually defined. Moon's description shares characteristics associated with design. The concept of ill defined or ill-structured problems were described by Rittel and Webber as 'wicked' problems (Rittel 1984). Cross observes:

> *'They are not problems for which all the necessary information is, or even can be, available to the problem-solver. ... In order to cope with ill-defined problems designers have to learn to have the self-confidence to define, redefine and change the problem-as-given in the light of the solution that emerges from their minds and hands'* (Cross 2007, p.23, 24).

In design, much of the literature on reflection originates from Schon's *Reflective Practitioner,* where 'practice' is viewed as *'a reflective conversation with a situation'* (Schon 1983, p.163). Schon observed professional studio practice where the quality of the *'reflective conversation'* was dependent on the experience of the practitioner. With

experience comes the knowledge to 'ask' pertinent questions and understand when the 'response' is appropriate. In the educational context this level of experience and understanding cannot be assumed, the process of reflection must be considered from the perspective of the inexperienced designer and the educational context.

Whilst the context of education has undoubtedly changed, the experience of education remains central to learning and teaching. In this context Kolb's Experiential Learning Cycle is relevant to the discussion. Kolb proposes a four-stage cycle, or continuous spiral, that can be entered at any point but which often begins (stage 1) by taking an *'action and seeing the effect of the action in this situation'* (Smth 1996). Stage two, *'reflective observation'* understands the particularity of the event, such that it is possible to anticipate similar actions and effects. Stage three, *'abstract conceptualisation'* reconsiders the process to gain general principles of the event. Stage four, in *'active experimentation'*, the value of these general principles are tested in new situations. Progression through this process adds to experience and so a new cycle begins.

Moon observes: *'an important feature of Kolb's idea is that the process of learning perpetuates itself'* (Moon 1999, p.25) but goes on to challenge the assumption that perpetuation is inevitable within a cyclical progression. *'Prior experiences of the learner ... will affect their initial perception of the experience'* (Moon 1999, p.33) and willingness to learn from any new experience, or draw on the range of experiences anticipated by the teacher. Learning and the translation of external information into personalised knowledge can not be assumed to automatically follow from experience. As Friedman observes: *'It is not experience but our interpretation and understanding of experience that leads to knowledge'* (Friedman 2000). In the traditional studio context, hands on experience with materials may prompt the *'reflective conversation with a situation'* (Schon 1983). However, the process of addressing 'wicked' ill-structured design problems, which are no longer defined by material interactions, may require explicit guidance to frame reflection and the interpretation and understanding of experience to lead to knowledge.

'Knowledge' is fundamental to learning but to be useful in the design context it must be actively used and reflected on. Just knowing or possessing 'knowledge' in itself is a minimally productive stance. Bloom's Taxonomy of Cognitive Domains indicates 'knowledge' as a lower order thinking skill, within a hierarchy of different forms of cognition, from knowledge at the base, through comprehension, application, analysis, synthesis and evaluation at the top (Bloom's Taxonomy, 1956, quoted in Wood 2004).

In design, the emphasis is often placed on using knowledge within a problem solving process (Cross 2007, p.38). Problem solving, as an experiential learning exercise, increases the activity of the student and awareness of personal actions. Wood proposes problem solving provides retention rates of ninety percent and is indicative of a deeper learning process and goes on to explain, where learning is by doing people are more likely to: *'digest or process the information they are receiving and reflect on how they learned'* (Wood 2004). In comparison, retention rates for lectures is only five per cent as surface learning techniques are adopted to address memory related tasks. Retention increases when people see the relevance, context and connections of learning. Learning by doing provides the knowledge on which reflection can be used to interpret and understand the process of acquiring knowledge, and as part of the design process, where knowledge is analysed, synthesised and evaluated against practice.

These issues are increasingly important as the rise in student numbers has contributed to a shift from *'learning for design'* to *'learning through design'* (Brighton 2008). In this model of design education, skills need to be transferable and *'of a more generic nature'* (QAA 2002, p.4). In these circumstances it is logical for education to move from an emphasis on acquiring 'knowledge', to one which focuses on applying knowledge through the higher cognitive domains identified in Bloom's Taxonomy. This emphasis is implicitly recognised by the Quality Assurance Agency (QAA); *'Learning in art and design stimulates the development of an enquiring, analytical and creative approach, and encourages the acquisition of independent judgement and critical self-awareness'* (QAA 2002, p.2). These aims are relevant within design and equally within a transferable context.

Whilst the QAA aims refer to the higher cognitive domains and the role of reflection within experiential learning, they do not clarify where or how, in the design education context, reflection can best be applied. Within a move to learning through design, for reflection to be valued it should be fully integrated into the design process, rather than an abstract additional requirement. A clear understanding of the design process is required to limit any unintended detrimental consequences and to identify where and how reflection is best applied.

**Modelling the Design Process:**

There are many models of the design process but many writers agree that the essence of design thinking proceeds through iterations of the process of: analysis - breaking problems into pieces, synthesis - putting together in a new way, and

evaluation - testing to discover the implications of the proposed solutions (Jones 1992). However, as Cross suggests there is: *'little empirical confirmation'* (Cross 2007, p.110) there is danger in describing design thinking as simplistically hierarchical, or progressive, as: *'the actual sequence of design thinking and decision making is not a simple linear process ... and the problems addressed by designers do not in actual practice yield to any linear analysis and synthesis yet proposed'* (Buchanan 1992, p.15). Cross observes:

> *'in practice, designing seems to proceed by oscillating between sub-solution and sub-problem areas, as well as by decomposing the problem and combining sub-solutions. ... The creative leap is not so much a leap across the chasm between analysis and synthesis, as the throwing of a bridge across the chasm between problem and solution. The 'bridge' recognisably embodies satisfactory relationships between problem and solution. It is the recognition of a satisfactory concept that provides the 'illumination' of the creative 'flash of light'* (Cross 2007, p.78).

The aim of reflection, in this context, is to enhance the creativity of the design process. However, understanding the concept of creativity in design in order to locate reflection is problematic, as whilst practitioners may be experientially familiar with the process it is harder to consciously define and verbalise. Resent research into the functions of the conscious and unconscious mind provides; *'experimental evidence for something we all instinctively know: that subconscious thinking is the source of our inspiration – it is central to creativity'* (Douglas 2007). However, subconscious thoughts are difficult to verbalise and articulate and when we try we might actually; *'hinder performance on insight problems. ... those for which the solution seems to pop out of the blue in an aha! moment'* (Douglas 2007), or as Cross describes a *'creative flash of light'*. Any introduction of conscious reflection must be mindful not to compromise but to facilitate the creative act at the centre of the design process.

In considering conceptions of creativity and the design process care must be taken to avoid simplified linear models. By re-conceptualising the design sequence into a cyclical experiential progression, following Kolb's cycle, design can be modelled as a cyclical process, more accurately reflecting the progressive development from perceptions of the problem, through analysis, synthesis and evaluation, prior to proposing solutions. Kolb's stages can be reconsidered as the linking process in the cycle of design. The design 'problem' starts the progression, Stage one in Kolb's cycle, in concrete experience acknowledges taking an *'action and seeing the effect of the action in this situation'* (Smth 1996) prior to the 'analytical' phase of breaking the problem into pieces. Stage two, the

*'reflective observation'*, attempts to understand the particularity of the event and links the progression to the 'synthesis' and putting the pieces together in a new way. Stage three, *'abstract conceptualisation'*, draws out the general principles and links to the 'evaluation' phase of testing to discover the implications. Stage four, by *'active experimentation'*, the cycle proceeds to the proposed design 'solution' and speculation on their effectiveness in new scenarios (see figure 1).

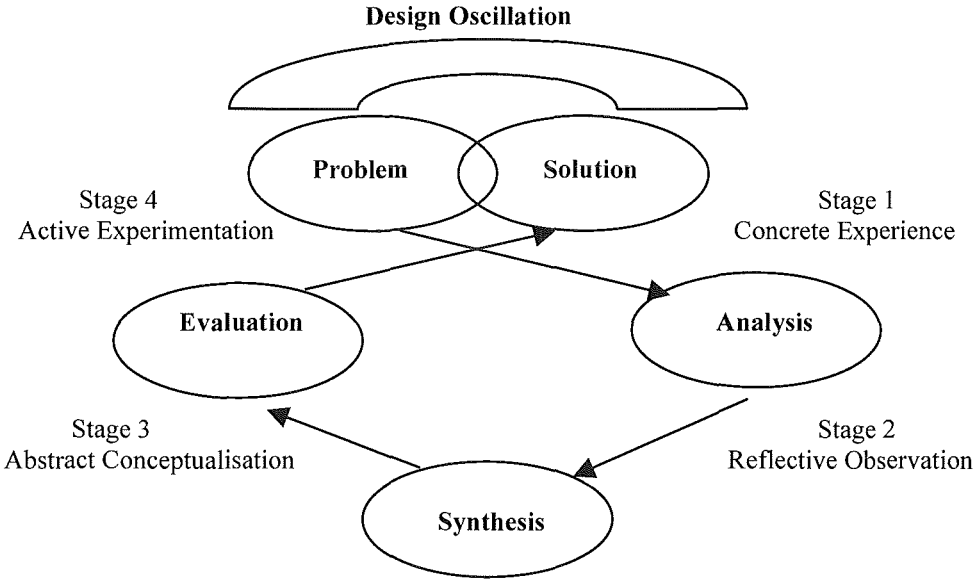


Figure 1: Experiential Design Cycle.

Cross' design oscillation occurs as conceptions of the 'problem' and 'solution' evolve together through iterations of analysis, synthesis and evaluation, the higher cognitive domains in Bloom's Taxonomy, and incorporate Kolb's experiential cycle. Without a cyclical understanding of the design process experiential learning may be questionable, challenging the educational value of a transferable model for education through design. But what of reflection, is it sufficient to locate it as the linking phase between analysis and synthesis within the design progression?

### Critically Reflective Design.

Experience of reflection within design practice is distinctly different from reflecting on events in a journal after the fact. In practice, reflection is often subconscious and integral to the design process and the material interaction. Whilst in a journal, reflection is a conscious review of past actions considered against alternative outcomes and a range of influential variables. 'Reflection', as with design, is context dependent, as Schon describes, *'reflection-in-action'* and *'reflection-on-action'* (Schon 1983). The differences

are key to understanding where and how reflection can be understood within design practice, and where and how it can be taught and learnt within design education.

Drawing on these issues a combined model is proposed, where experiential learning is considered within a critically reflective design progression (see figure 2).

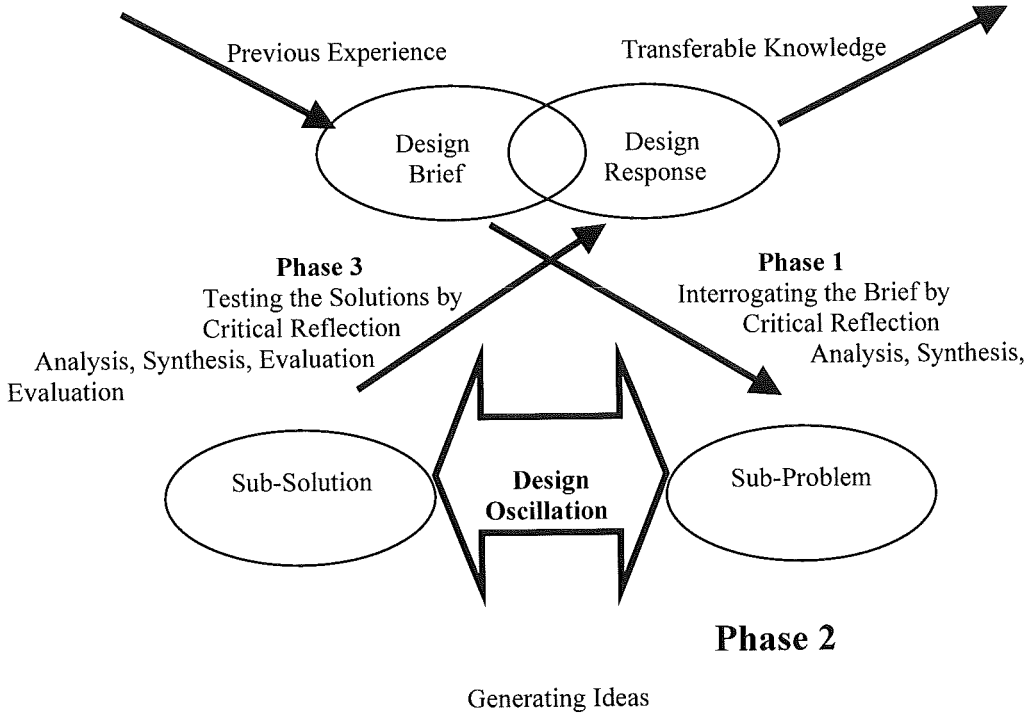


Figure 2: Critically Reflective Design Cycle.

Figure 2 describes the critically reflective design process. The central cycle draws on Kolb's model of experiential learning, renamed and reconsidered to reflect the different phases of the design process. Consider the cycle, entering from the top left-hand side of the model.

**Phase 1.** Introduction of the brief. The designer and client, or tutor, come to the brief with a range of prior experiences informing their expectations. *'Often, the problem as set by the client's brief will be vague, and it is only by the designer suggesting possible solutions that the clients' requirements become clear'* (Cross 2007, p.34). There is a translation phase where the designer frames the problem within the terms of their own experience. *'The designers' very first conceptualisations and representations of problems and solutions are therefore critical to the procedures that will follow'* (Cross 2007, p.34). Ordinarily past experience remains opaque within the design process but if these are limited or prejudiced, and remain unchallenged, they may hinder positive responses to learning and design (Moon 1999, p.33).

Conscious reflection on previous action and the influence of interpretations on the brief, increases opportunities to challenge assumptions, expose bias and research concepts. Investing in high quality research reduces the opportunity of 'solution poverty' where ideas are merely reworked (Ward 1984, p.229). Schon describes how this 'reflection-on-action' draws on previous experience, recognises the ill-defined nature of the problem, and that it has been framed within personal conceptions (Smith 2001). The model retains the concept of Kolb's experiential cycle and in this phase incorporates the first two stages where actions are taken and the effects noted in the situation in order to understand the particularity of the event. Analysis, synthesis and evaluation guide critical reflection and challenge the selection and ordering imposed on the criteria incorporated into the process.

**Phase 2.** The design oscillation. The place where the 'creative leap' moves the design; *'to a new part of the solution space'* (Cross 1997, p. 427). The mind rapidly moves from unconscious to conscious awareness of ideas in an oscillation bridging concepts of the sub-problem and sub-solution. *'The 'bridge' recognisably embodies satisfactory relationships between problem and solution. It is the recognition of a satisfactory concept that provides the 'illumination' of the creative 'flash of insight''* (Cross 2007, p.78). Concepts of the problem and solution co-evolve to form a matching problem-solution pair (Cross 2007, p. 102). Shadlen suggests, insight appears after: *"an unconscious decision to be conscious"* (Shadlen, quoted in Douglas 2007, p.44). Certainly, unconscious thinking appears most effective: *'where people have to make difficult choices based on large amounts of hard-to-assess information'* (Douglas 2007, p.45). This stage incorporates Schon's 'reflection-in-action', related to *'thinking on our feet'* (Smith 2001). Asking for conscious reflection, during this unconscious phase may hinder the creative process, reduce the quality of experiential learning and the sensitivity of the design solutions.

**Phase 3.** Testing the solution. This third stage returns to more conscious 'reflection-on-action' and re-translates the proposed solution into the clients perspective, checking initial criteria have been addressed and defined within terms of the solution. Re-evaluation by critical reflection using analysis, synthesis and evaluation, consciously translates the experience for the designer and client. Whilst the creative process is largely unconscious, clients may be reassured by apparently logical explanations for the solution. However, care is required as post-rationalisation can be misleading, as it suggests that because something appears 'logical' after the fact, that the process of creativity must actually follow a logical path. The difference should be understood and explained to avoid students thinking this is so and, therefore, attempting to model their practice on this false

assumption. This second translation, from 'inspiration' to 'elaboration' requires evidence to support the proposed solutions as the designer consciously clarifies issues for the client. This process also translates project specific information into transferable knowledge and contributes to the process of becoming an 'expert' designer. In Kolb's terms the third and fourth stages, where general principles are drawn from the proposed solutions and are used to speculate on their effectiveness in new situations. From the perspective of education through design, this is where design practice is reconsidered within a wider context and as part of a portfolio of transferable skills.

Essentially, the model proposes three iterations of reflection using analysis, synthesis and evaluation. Two phases of conscious 'reflection-on-action' informing and testing the unconscious 'reflection-in-action' of the creative design oscillation.

**Developing Critically Reflective Design:**

The model is proposed to raise awareness of the different forms of reflection and defend the creative essence of the design process from inappropriate requests for conscious reflection. Visual models are important because they help shape perceptions of the world (Jerrard 2000, p.233). However, as Moon observes: *'the description of reflection in terms of phases might be useful for facilitating reflection, while not necessarily being a representation of what goes on in the brain'* (Moon 1999, p.35), is also valid for developing critically reflective design.

In considering these issues a similar degree of awareness of the differences between theory and practice, and a commitment to the defence of design practice is essential. Consider again Bloom's Taxonomy. The quality of reflection relates to the quality of thinking associated with the cognitive domains. Reflection develops through the same hierarchy, basic knowledge from observation, through to comprehension, application, analysis, synthesis and evaluation and self-awareness. These are characteristics that can be encouraged and identified within visual, textual and oral submissions. Indeed, Brookbent differentiates the reflective practitioner by their ability to describe actions and therefore, reflect on them and *'emphasises the importance of naming the process'* (Brookbank 1998, p.78). This view appears to prioritise the conscious process of reflection-on-action, however, there is an advantage, because they are conscious they can be taught and learnt. With practice conscious articulation and habituation of the process of 'reflection-on-action' may enhance unconscious 'reflection-in-action'. In the same way as when we learn to drive a car the conscious manipulation of pedals, steering wheel, gear stick and mirrors are complex and confusing but *'with experience they become second nature and we can do*

*them automatically – in fact, once this happens, conscious analysis inhibits performance'* (Douglas 2007, p.45). Knowing what to look for, when and why allows tutors and students to have a more informed reflective conversation, which acknowledges the value and differences of reflection-on-action and reflection-in-action.

Awareness of the process of learning allows students to take control of their actions, understand projects as a series of linked activities, rather than unconnected projects and be sensitive to when it is productive to consciously reflect-on-action, or more productive to unconsciously reflect-in-action. Critically reflective design thinking is emancipating and transferable as it helps form a deeper learning approach. Emancipated learners are more fully aware of the relationship between their design practice and the need to continually invest in new knowledge as lifelong learners.

Critically reflective design raises awareness of the context, design is context dependent and the context of design is changing. In design education tutors, students and the profession contribute to the changing context. Teaching and learning, students and tutors, designers and clients need strategies to remain relevant. The way we think affects the processes we adopt and the products we design. Critically reflective design offers a method to consider these issues from a design perspective and contribute to the discourse, to build a body of knowledge that values design and contributes to its professional and pedagogical development.

**N.B.** When this paper was presented at conference Dr. Austerlitz questioned the use of the terms conscious and unconscious, as they originated from Freud and as such were now considered contested. These terms have been referenced from Douglas [2007 #414], which also observed this point but did not offer alternative terminology. To maintain consistency in the text and the conference presentation, these terms have been maintained. However, Professor Langrish has suggested alternative terms of mind and brain may be more useful to distinguish the different functions (Langrish 2008). I am grateful to Dr. Austerlitz and Professor Langrish for their support.

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**CItad 4th International Conference**

**Enhancing Curricula: using research and enquiry to inform student learning in the disciplines** 3 – 4 April 2008 Lycee Francais, New York


Authors: Kathryn Hearn and Elizabeth Wright

Institution: Central Saint Martins College of Art and Design, University of the Arts, London, U.K.


Disciplines: Craft-based Disciplines, Ceramic Design.

Objectives: Making changes to the curricula as a result of the outcomes of research and other forms of enquiry.

Contribution: Symposia; Second Paper of Three: Considering the value of reflection within teaching and learning in the context of studio practice.

Title: **"Something's not quite right in my minds eye!" ***
**Critical reflection on studio practice.**


**Abstract:**

This paper critically reflects on the development of curricula in B.A. (Hon.) Ceramic Design, at Central Saint Martins College of Art and Design, University of the Arts, London, United Kingdom (U.K.). Since 1991 the course has established a student focused philosophy of continually challenging, enhancing and redefining the delivery of curricula. Through an ongoing dialogue, staff observations, actions and interventions are continually assessed for their value to the teaching and learning process. Whilst much of this conversation may initially be informal between staff, increasingly we are formally interrogating the practice of design education with students, through structured critical reflection.


This process of reflection has grown from an acute awareness by the course team of differing learning styles and approaches, and how these are expressed through design (Hearn 2007). The impact and expression of different learning styles on practice is contested, however, the debate has provided opportunities to develop the concept of a range of professional methods, through which the process and practice of design can be discussed. Appreciation of professional language has been recognised as integral to the design process, and more generally to the development of the transferable skills required through life (Tomes 1998).

Transferable skills are valued by Ceramic Design, which as a craft-based discipline is often considered to be an endangered subject (NALN 2006), under increasing pressure for space in colleges and outdated perceptions of value. However, such notions fail to appreciate the values of experiential learning and hands on three-dimensional practice (Wright 2006). As student numbers continue to rise, under U.K. government aspirations for fifty percent of 18 –

30 year olds to enter higher education, there is a shift from learning to design, to learning through design. Such significant changes in the context of learning require interrogation of the strategies used to achieve these goals.

In the twenty-first century craft-based disciplines offer opportunities to address the context of experiential learning (Kolb 1984), to enhance research and enquiry into and through discipline specific practice (Gardner 1999). This paper reviews a three phase reflective process completed by students in the first term of the final year of their degree. Phase one, a diagnostic analysis of tutor methods, design by practice, project or concept, to select appropriate guidance. Phase two, weekly critical incidence reports to track progress (Brookfield 1995). Phase three, a final reflection on the project prior to progressing to the following term's work.

The feedback cycle seeks to evaluate the theoretical value of critical reflection within the practice of teaching and learning (Schon 1983; Moon 1999). Through making the process transparent and the basis for discussion, we aim for staff and students to acknowledge; *'what I'm doing right now is creative and spontaneous, yet grounded in my experience. I know it's good and if need be I can tell you why'* (Brookfield 1995, p.47).

We are grateful to the students on Ceramic Design for their consent to publish images of their work and for comments taken from their feedback forms. All images are attributed, however, the names associated with personal comments have been changed to ensure privacy.

**Introduction:**

BA (Hons.) Ceramic Design, at Central Saint Martins College of Art and Design differs from many Ceramic courses in that the emphasis is on 'Design', using design methods and aiming for designed outcomes within the broad professional context. Graduates go on to fulfil a wide range of professional practice, from retail design, editorial, marketing, research or private practice. Based in Central London, firmly locates the course within the U.K. design industry.

This paper builds on an emerging body of research and dissemination developed by the staff of Ceramic Design over the last four years. Whilst the thinking behind this research extends from many years of teaching, the impetus to reflect on the practice of teaching and learning within this three-dimensional design discipline focused around the process of revalidation of the course within the credit framework. During this period the potential influence of learning styles and their relationship to design methods was discussed and defined within the course structure. Subsequently, we discussed this process at a number of educational conferences

(Wright 2006; Hearn 2007) where valuable feedback from colleagues has contributed to the conversation.

This process of reflection and discussion has been extremely beneficial to the development of the research and, therefore, we have considered its value directly within teaching and learning. A similar process of reflection and discussion has been introduced to enhance the student's decision making process. By making these issues transparent, students have become more aware of their decision making process and have used this knowledge to enhance their design processes and discussions with tutors. In this paper we reflect on this process and on the reflections of students engaged in ceramic design. This meta-reflection was made possible by permission of the students to interrogate the process and their reflections. It is interesting to note that as part of this process, we feel the level of trust and transparency between staff and students has positively developed. Whilst this may be an informal observation, it raises the question, why reflect on practice?

**Why Reflect on Practice?**

In recent years, under government directives for fifty percent 18 - 30 year olds to enter higher education, student numbers have risen dramatically from just over 16,000 in 1994 – 95, to 56,785 students on design courses in the U.K. in 2003 – 04 (Design Council 2007, quoting Higher Education Statistics). At the same time there is an increasing awareness of limited resources, the toxicity of manufacturing and longevity of ceramics. Design thinking is changing from a focus on manufacturing, to one of strategy.

This change in the context and practice of design has been reflected in the educational process. Whilst historically it may have been true to suggest that art schools provided education for design, with recent changes it may be more accurate to describe the process as education through design. Such significant changes require us to reflect on and reconsider the educational process and the impact this may have on the individuals engaged to teach and learn in this new context. Practitioners need to be open to change and adaptive in their approaches to a lifetime of learning. Viewing change as an opportunity requires mental agility and a positive perspective. Developing a reflective stance requires consideration and is essential to becoming a critically reflective designer. So how and why have we done this?

Why reflect on reflection within practice? It is to refine and test the value of reflection in practice and to practice. Although Schon (1983) is widely acknowledged for proposing designers as reflective practitioners, much of the thinking around reflection is not design specific. If we are to reflect, we must interrogate the value of reflection to design. In this example, Ceramic Design student's experience of reflection is interrogated against the development of their learning and understanding of their design process.

In Ceramic Design, specific design methods have been identified to help students understand their creative practice, their relationship to it and their learning style, together with the appropriate models of professional practice. These design methods help students to become reflective, with an awareness of its value in different contexts. Reflection and the process of connecting actions and taking responsibility contribute to a deeper learning approach (Biggs 2003, p. 253-4), which actively link projects within a transparent curriculum.

Three design methods are defined, to teach the discipline of Ceramic Design, which reflect professional approaches:

- *Design by Practice* has a material or process led focus on the intrinsic qualities of objects. This can be less clear as to its outcomes and can constantly evolve.
- *Design by Project* is perceived as linear, with specific delivery points, for example, research, design development, production.
- *Design by Concept* is more flexible, highly reflective and research led. This begins by building a critical framework for understanding the potential of the project.

These Design Methods provide a professional language for students and develop their analytical skills within their design practice but also in oral and written accounts as part of their transferable skills. Transferable Skills are important to Ceramic Designers, specifically as the ceramic design industry is limited and graduates have to look beyond their discipline. The course team feel very strongly that a professional education in ceramic design is valuable despite concerns that it is, as a subject sometimes considered as an 'endangered subject' and as a studio based discipline, expensive in terms of space and materials. Schools have incrementally undernourished the three-dimensional subjects, particularly in ceramics at secondary level. This impacts on those students who might want to continue the discipline at Foundation level and into a degree subject, contributing to diminishing recruitment and relatively low student numbers. According to a report commissioned by the Ruskin Mill Educational Trust;

*'the educational progression of pupils is being affected by the decline of traditional art and craft skills. 'Using their hands simply makes children more intelligent,' said Dr Aiga Sigman, who warned that the UK is becoming a 'software instead of screwdriver society'* (Telegraph, 2008).

However, at Central Saint Martins College of Art and Design the college have chosen to value the currency and potential of Ceramic Design, the course represents 2.15% of the current under graduate population. The college, in its planned move to the new Kings Cross site in 2011, has chosen to flag 'Learning by Doing' as a key attribute for conceptual planning and use of space.

Experiential learning is an essential part of the process of becoming a 'designer' in Ceramic Design. Three-dimensional hands on practice provides the framework through which students learn how to become designers. The materiality of the subject provides the focus for developing discipline specific skills. Simultaneously, this method of learning develops students ability in: *'designerly ways of knowing:*

1. *Designers tackle ill-defined problems.*
2. *Their mode of problem-solving is 'solution-focused'.*
3. *Their mode of thinking is 'constructive'.*
4. *They use 'codes' that translate abstract requirements into concrete objects.*
5. *They use these 'codes' to both 'read' and 'write' in object languages'.*

(Cross 2007, p.29)

Ceramic Design provides an opportunity for the understanding of risk as few other subjects. Not just within the extraordinary nature of its material and control but as a subject that has to be tangible, whilst bridging theory with practice. This is a delicate balance as design education has moved from the traditional model of one-to-one tuition, to mass education and virtual studios.

Similarly, the context has changed, with finite resources and flexible careers. Whilst many aspects of practice are embedded in tactic knowledge, we believe teaching, learning and the defence of design thinking can be supported by critically reflective analysis. Intimate knowledge of hands on practice drives our desire to make the values of practice recognised before they are lost to the virtual world.

As part of the process of addressing these issues, the course team interrogate their practice as teachers, whilst reviewing the learning outcomes of the students. This paper has grown out of the analysis of monitoring the introduction of a more formally reflective process.

**Research Method; Action Research**

As Opie notes: *'the essence of action research is that it enables a reflective cyclical process to be bought to bear on the understanding of the problem at hand'* (Opie 2004, p.79). Our problem was prompted by the introduction of a new course structure. Incorporating reflective feedback into the project process aimed to enhance student learning and test the new structure in practice. Action research, with its emphasis on practical problem solving, collaboration, seeking to understand social systems, the process of change, and aiming to deliver: *'usable and sharable outcomes'* (Opie 2004, p.81) provides a positive structure within which to analysis progress and implement change.

The research, data and analysis is drawn from a three stage process;

**Stage 1 – Specialist Tutor Selection** - the first set of data comes from feedback from the tutor selection process. The Design Methods are used as an analytical tool by which students assess the tutor's practice, analyse their own practice requirements, and then negotiate tutorial support for the project.

**Stage 2 - Weekly Critical Incident Questionnaire's (CIQ)** - as proposed by Steven Brookfield in *Becoming a Critically Reflective Teacher* (1995).

**Stage 3 – Interim Reflection** - a third form completes the process and provides the framework for the end of project tutorial. This process is reflective and projective as it reviews progress and then considers the value against plans for the next phase.

The following quotations are drawn from each of the three stages and illustrate typical responses to the questions posed.

Stage 1- Specialist Tutor Selection provided insights into the tutor's 'Design Methods' in relation to descriptions of their own practice.

*'Tony would be a suitable tutor for me because of his own conceptual design approach and he works in the professional context of my future aspiration, also he suits my learning style'* (Jayce).

The forms identified quite practical needs relating to technical skills required.

*'In order to explore the ceramic material; clay and glazes'* (Annastasia).

Tutors teaching style were sometimes implicitly referred to but often explicitly defined and how that worked in support of the student learning.

*'I also feel able to communicate well on a conceptual level with Tony, feeling that there is a similar wavelength but also a healthy disagreement on some areas which provides interesting debate'* (Katherine).

Occasionally the information was very direct and related to the student's perceived empathy between tutor and student.

*'I realise that Tony doesn't seem to be the right specialist tutor for what I aim to do this year.....in the 2nd year he seemed to understand better than anyone else what I wanted to achieve from the course and where my ideas lead to'* (Caroline).

Stage 2 – Weekly Critical Incident Questionnaires aims to help:

*'us to embed our teaching in accurate information about student's learning ... It is a quick and revealing way to ascertain the effects your actions are having on students and to discover the emotional highs and lows of their learning. ...Its purpose is not to determine what students liked or didn't like about the class. Instead, it gets them to focus on specific, concrete happenings that were significant to them'* (Brookfield 1995, p.114).

The CIQ asks students to consider five questions against the previous weeks progress; the moment when they were most engaged and most distanced from what they were doing, the action they found most affirming and puzzling, and what surprised them the most. The forms were distributed each week at the course business meeting. The tutor immediately photocopied the forms and returned the original to the student. The findings are drawn from a sample of 260 questionnaires.

From a student perspective this formally encouraged their critically reflective process, for a small number of students it was difficult and took some time to engage effectively as they had to recognise its value for their own practice. Once this was achieved students completed the form themselves even if they missed the meeting. Students valued the conduit to their own thoughts and as an opportunity to share them with a tutor who had an overview of their progress. They were encouraged to use the CIQs to help access their ongoing reflection towards completion of their Critical Commentaries, submitted at the end of the project. Many students successfully used the CIQ as the basis for this more formal course requirement.

From a teaching perspective the CIQs were very effective, providing a rapid overview of the emotional and reflective position of each student's position both creatively and personally. The tutor was able to react rapidly, if necessary, or to wait for the next tutorial to respond to issues raised. The CIQs were particularly helpful in resolving misunderstandings. The CIQs also helped the tutor observe how students were reflecting, the language and depth of their learning, and where they placed their 'conception' of their practice. As Davies (2005) notes, there are a range of conceptions of design and although these can be difficult to tease out of practice reflection has helped to clarify some of these issues.

More specifically, it was interesting to review each of the five questions within the CIQs and their reflective responses, asking which questions elicit what sort of reflection? The themes of the analysis emerged from the responses.

**Most Engaging Moment?**

This question prompted the most descriptive responses, and usually the least reflective. Very often they were statements without qualification. For many students they were task orientated, for example, focused on research or specific activities.

**Most Distancing Moment?**

These responses reflected on the student's lack of confidence in their ability or doubt in their choices:

*'Both tutorials, I think this is my fault, finding it very hard to articulate ideas so I end up saying what I think they want to hear, just going through the motions. Keep on being told 'to work more quickly' this feels so awkward, don't know how'* (Emily).

Students usually reflected on how to move a problem forward and rarely left a problem hanging without some attempt at resolution. Sometimes reflecting on a sudden insight:

*'Craft Symposium at the V&A – It was distancing to realise I was most interested when the subject veered away from "craft' per say'* (Katherine).

This question often encompassed practical worries about family, home, illness, funding and dissertation choices. Occasionally, it was a useful place to vent frustrations about the staff and course, or college facilities.

**Most Affirming Action?**

This was generally a very positive and enabling action, predominately evidenced by making something in relation to their project work, either in three-dimensions or drawing as an active commitment to design development. For the staff this was encouraging as the course's ethos centres on the premise of *'designing through making'.*

> *'V&A and British Museum finding hideous ornaments which I really liked!'*
> (Rowan)

Reflections were often qualified with a feeling of well being.

**Most Puzzling Action?**

Students at the start of the process would often qualify what was required of this question and be most anxious about its expectation. These responses were often the most reflective. The students would almost talk to themselves, as in a diary, being comfortable in posing a question without having to answer it. They were often quite small in a statement, or very large in a discursive point, both ends of the spectrum. It is interesting that Brookfield notes; 'Events that engage our emotions are those that tell us most about ourselves' (Brookfield 1995, p.72) because they confirm or contradict our assumptions.

*'Finding how to push my projects forward I find it hard to develop and use the feedback I receive. I also find it hard to see the positive side to the feedback I receive'* (Alison).

This comment is very revealing for both the student and staff as she would never have said anything so direct within a tutorial context. Alison always says more in the written word, which she is then able to unpack in a tutorial.

**What Surprised You Most?**

These responses were very wide ranging; there was reflection on significant and profound aspects of learning:

*'That my project has probably developed from my deep-seated fear of the dark! It is fascinating how personal issues can be and where the initial idea springs from'* (Joanne).

Specific tangible elements of learning which resonated with some obvious and quite ordinary actions:

*'That I had the information in front of me, it just took articulating my drawn information into a verbalised idea'* (Lizzie).

A number of responses were concerned about the time passing quickly, this aspect was particularly important as they were final year students:

*'How I spend so long working and it doesn't seem like I am getting very far very fast!'* (Lizzie)

*'Seven weeks. I'm still swimming a thick home-made stew of closely linked ideas. There's too much of it and its not right yet. Find seasoning….'* (Emily).

Sometimes students would use this as an opportunity to share personal experience. Occasionally, they were of a frivolous nature:

*'England Beat France in the Rugby!'* (Ginny)

or more fundamental reflections:

*'Fact I am feeling better - I do not know whether it is linked to counselling or the course? But nice feeling….'* (Nadia)

Stage 3 – This third set of data was introduced as an 'Interim Reflection' form and completed the process and provided the framework for the end of project tutorial. There was significant awareness of learning and reflection, with a number of shared positions at this stage. The three most common reflections were; issues around time, clearly defined task based activities, and the value of reflection, for example,

*'Always good to write down the learning process, since I would probably not do it on my own. Good start to think about the project and process after the break. To get into it again, even though I am constantly thinking about it. The tutorial will probably gain from this!'* (Emily)

This third set of forms indicated a process that is reflective and projective, as it reviewed progress to date and then considered the value against plans for the next phase. This linking of learning, from one project to another indicates productive reflection and the development of deeper learning strategies.

**Benefits and Challenges:**

Developing reflection is an ongoing process of growing self-awareness and care should be taken in any assessment of value from such a relatively short-term project. However, after many years experience teaching Ceramic Design the analysis can be informally considered within the context of a longer view. Baring this in mind, three significant areas of benefit and challenge have emerged.

**1. Student value**

• Personal reflection – often the students noted being happier with their work through this and other processes of reflection. For example, a student suggested to the cohort, at the impending end of year presentation, that we should institute a similar 'reflection' form as it

had previously helped her preparation. This prompted the introduction of a further reflective process adopted by the group.

• Pressure valve for doubt, frustration and excitement as the students moved into the final third of the project. This was reflected in responses increasingly noting the importance of planning and the use of the remaining time.

• Raises awareness of journey. Value as documenting the process of learning and taking an *'objective'* position of their development.

**2. Staff value**

• Immediate feedback on group dynamic and personal position – identifies flash points, for example, extenuating circumstances.

• Builds trust – being heard and listened to was revealed by the importance noted of making reference to points raised, in earlier CIQ, at later tutorials.

• Challenges assumptions and tutor perception during the teaching process, which encourages the recognition of difference and diversity of experience and learning styles in students.

**3. Critical Discourse / Pedagogy**

• Creates a transparency and diversity in the process of learning.

• Inclusive in its approach to choices for individuals and for staff to make informed choices.

Challenges were also recognised;

**1. Time - implementation**

The process creates a volume of paperwork that needs time to analyse. It could, however, be incorporated into a digital context, 'Blackboard' for example. This would mean the CIQs could be processed away from the desk and the student. However, it would need to be understood by the student that they should not assume a tutor response, as this may change the dynamic from a student centred process of reflection. Digitising the process might also depersonalise feelings of being heard and seen.

**2. Time - delay**

Keeping on top of the process and responding to student feedback only as and when appropriate. Taking care to 'hear' what has been said and acknowledged, even if it challenges the tutor.

**3. Feedback fatigue**

It is important that the process is not too 'written rich'. This reflective process is embedded within a range of visual, object and oral interactions. The aim is to design the reflective process to enhance critical design. Some students feel vulnerable about writing, they want to be designers, the emphasis is on achieving that goal. However, this process can

encourage students to be critical in apposite 'small chunks' and then build them into a greater critical dialogue when reflecting on the body of responses.

**Review**

This series of interventions have developed over two years and each group has shown differences. This is a work in progress that will continue to develop and grow in response to student feedback. The intention is to help define reflection for design in a variety of ways. It is important that we continually reflect on the process to recognise students as individuals, acknowledge their desire to be seen and heard, and recognise their *'right of passage'* through the growth of their learning. Every year group is different, this process helps us to remember this and to continue learning, as we help student's to become critically reflective design thinkers.

* Graham L (2007) *Critical Incident questionnaire, permission to quote directly.*

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| **Title:** | **Endangered Subjects, Crafting Sustainable Minds from Practice Based Education.** |
| Author: | Elizabeth Wright. |
| Institution: | National Arts Learning Network |



**Abstract:**

Environmental and sustainable issues are often modelled within concepts of ecosystems that describe a delicate balance of interconnected relationships. Closer inspection may reveal these relationships are rarely simplistic equations based on equal measures. Systems are complex, some elements more vulnerable than others, relationships change and adapt in response to environmental conditions, or become endangered and die. In the twenty-first century sustainability requires a shift from short-term gratification based on profligate consumption, to a more globally connected and long-term view of resources.


This paper proposes sustainability as an attitude of mind. The way we think leads to the development of systems, which govern the relationships of constituent elements and determines how these are used in the production of products. Education contributes to how we think and see the world. Education through craft based subjects *'contribute to a moral and social development as they posses an inherent lawfulness.'* (Sigman, 2008, p.7) *'People learn about themselves through the things they make, that material culture matters.'* (Sennet, 2008, p.7) Why then are there a raft of endangered crafts based courses in the United Kingdom (UK) at a time of expansion in higher education, in response to government aspirations for fifty percent of eighteen to thirty year olds to enter higher education by 2010?

This paper reports on the findings of a National Arts Learning Network (NALN) questionnaire and interviews reflecting experience of *Endangered Subjects* at seven leading UK Universities. Course leaders, recent graduates and students provide fascinating insights into the contemporary educational context, where short-term measures of recruitment and direct employability threaten the existence of many craft subjects. These actions challenge the pedagogic principles of arts based education, without interrogating the long-term implications or consequences for what might remain.

This discussion is complicated as craft practitioners often 'think' through the process of their practice. A defence of the crafts and a shift to a sustainable mindset requires critical analysis of the haptic knowledge on which craft is based and translation into a rigorous discourse. These issues have implications for the broader discussion on how contemporary crafts respond to global environmental and sustainable agendas. Without hands on experience of crafts based subjects, contextualised within a global perspective, individuals may be ill-equipped to appreciate the subtle qualities that reflect the humanity of the crafts, or the analytical skills to translate this knowledge into sustainable industrial contexts.

This is not a Ludite call to arms (Quinn, 2008), or plea to subsidise the questionable economic reality of the 'hand made' in Western cultures. This paper proposes raising awareness of the benefits of creative craft based education to 'see' the world through more sustainable and ethical perspectives. Without thriving craft education, fully integrated into curriculum design, not only do we endanger the crafts as subjects, but also the ability to appreciate their value to stimulate the intellectual potential embedded in craft knowledge, to contribute to a more positive force for society.

**Introduction:**

To plan for sustainable futures requires understanding how we have come to be where we are and what it is about the present moment that we can change in order to contribute to making the future truly sustainable. This paper considers these issues from a UK educational context. Where it is paradoxical that at a time of expanding higher education many crafts based courses are in decline and closing. So much so that what remains has been identified as Endangered Subjects (NALN, 2009). This paper reviews research funded by the National Arts Learning

Network (NALN) to investigate this phenomena and advocate a defence of these subjects.

That these subjects are in decline may, in part, be due to the long industrial history of the UK and the integration of art and design education as part of the economic activity of the country.
*'A significant part of the framework, central principles and traditions of art and design education can be traced back to major developments in the 19th century, when the performance and contribution made by the applied arts (design) to the commercial competitiveness of British industry was first recognised by the State'* (QAA, 2002, p.2).
For more than a century art and design colleges have been complicit in the creation of desire for more and more products and services that have fuelled industrial consumption. Today the creative industries represent 7.3 per cent of the UK economy *'and are growing at five per cent per year (almost twice the rate of the rest of the economy)'* (Department for Culture, 2007).

With the rise of information technology the UK has embraced the promise of an online digital society. In the twenty first-century UK context, predominately hand made practice may appear an outdated and expensive choice. In this context the creative and commercial competitiveness of the UK may appear best orientated towards the digital domain. However, although the digital realm is rapidly expanding and offers massive opportunities, this perspective need not reject the more 'traditional' facets of the creative industries. We live in the three dimensional world. Our histories, memories and understanding of the of the 'real' and digital spheres rest on tangible experience of material objects dependant on finite resources. Ignorance of our particular history and its relationship to numerous alternative cultural histories, combined with an un-interrogated embrace of the digital, have created an insatiable and unsustainable desire for more and more products with less and less understanding of what this means. Consumption and production have become disconnected within the minds of consumers and many designers. With the loss of Endangered Subjects from Art and Design colleges, how will future designers acquire accurate information of the material costs of the products they design?

The materiality of design is an essential element within discussions around sustainability. The move to digital does not mean non-material. Vast numbers of

landfill sites provide ample evidence of the rapidity of technological lifecycles and the material cost of the styled casings. *'Over 90per cent of the resources taken out of the ground today become waste within only three months'* (Chapman, 2005, p.8). Consider the power required to produce, and then run these products and it is hardly surprising that there is a growing realisation that materials are not only finite but also rapidly diminishing. Raising awareness of these issues and creating positive attitudes from which to address the problems offers a vital opportunity for a positive contribution. Education is an integral part of this process. Craft, with its intimate understanding of materials, processes of production and the creation of products, has the potential and responsibility to actively participate in finding sustainable solutions.

If as Dryden proposed, *'we first make our habits, and then our habits make us'* (1631 – 1700), it is vital we think through how we come to make the products that shape our expectations of the future. In order to shape expectation of a sustainable future, these issues must be embedded into the educational process. After hundreds of years of Western industrialisation, where the concept of built in obsolescence fuelled many economic models, this will not be accomplished by a single, simplistic intervention but rather requires a fundamental re-conceptualisation of problems and potential solutions.

It is now, at this pivotal point in the economic cycle, where environmental awareness challenges the validity of unsustainable models, that craft based knowledge offers alternative perspectives. As crafts become endangered NALN initiated research to investigate this phenomena, to advocate a defence and contribute to sustainable futures.

**NALN Research into Endangered Subjects:**

In spring 2006 a bidding process was initiated by NALN and the University of Cumbria was awarded project funds as lead institution. Laura Baxter and Ian Farren, at Cumbria, proceeded to set up an open invitation to all twenty-three NALN member institutions with curriculum provision in Endangered Subjects and an interest in the project. This process established a steering group of seven institutions nationally distributed;

- University of Cumbria (UC)
- Camberwell, Chelsea and Wimbledon, University of the Arts London (CCW)
- Hereford College of Arts (HC)

- London College of Communication, University of the Arts London (LCC)
- Plymouth College of Arts (PC)
- University for the Creative Arts (UCA)
- Central Saint Martins College of Art and Design, University of the Arts London (CSM).

This steering group identified the necessity to define the depth and breadth of those subjects that might be included within the category of Endangered Subjects and examine the reasons for the perceived decline. In response to these aims a definition of Endangered Subjects was proposed as part of an audit document devised to collate information from each of the seven institutions and establish a base line for further research. The audit document proposed a;

'Definition of Endangered Subjects
For the purposes of this data collection the term 'Endangered Subjects' is defined as those traditional subjects for which the overview of application data evidences a consistent decline; for which there is a fragile employment sector; and within which continued course provision is perceived to be at risk. This definition places an emphasis on craft, but is mindful not to exclude other art forms such as traditional music, dance and drama and rural and environmental crafts.

*The definition is as broad as possible, covering the following disciplines:*
*Craft:*
*- textiles*
*- ceramics*
*- jewellery*
*- furniture*
*- woodwork*
*- glass*
*- metalwork*
*- willow work*
*- basketry*
*- paper making*
*- traditional toy making / automata*
*- leatherwork*
*- mosaic*
*stone work / letter cutting*
*Printing:*
*- letter press*
*- fine print / printmaking*
*- book binding*
*Performance:*
*- traditional music / song*
*- traditional dance*
*- traditional drama / theatre*
*Rural / Environmental:*
*- traditional rural and*
*- environmental crafts*
*- (stonewalling, thatching,*
*- coracle making, rope work,*
*- blacksmithing, coppicing).'*
(Wright, 2009)

Drawing on their experience, course leaders from relevant subjects and each institution were asked to complete the audit. The findings were then used as the basis for further feedback from Masters students and recent graduates from each of the member institutions. The aim of the project was to contribute to a defence of three-dimensional craft practice in higher education. These issues were complicated because much of the knowledge on which these disciplines are based is embedded within practice and experienced through haptic engagement. Practitioners 'think' through their practice. Whilst such implicit knowledge is recognised and valued by fellow practitioners, without explicit explanation and evidence many of the qualities that constitute excellence within the crafts may seem opaque if viewed from alternative perspectives. Often such qualitative criteria are considered 'subjective' and 'soft' against more 'objective' quantitative 'hard' measures. Numeric measures are easier to compare and communicate. There is danger that in an attempt to be efficient, those measures that can be counted will be counted (Handy, 1994). What is often forgotten, is that these measures reflect different qualities and although numeric elements are easier to count, this does not mean that they necessarily count the qualities that reflect excellence in the crafts.

This danger, from making decisions based on quantitative analysis of selective variables resonates within broader discussions for sustainability. In a networked global economy decision-making can be complex as different needs compete within the mix. Craft practitioners are used to making numerous subtle decisions often distributed throughout a physical experience of practice. Through direct engagement with material, practitioners become comfortable with distributed complexity, although they may have limited practice in expressing the process in ways that can be understood beyond their discipline. It is this process of thinking through making and knowledge of materiality that offers new sustainable perspectives. The way we think influences the elements we choose to consider and the hierarchy of engagement. Craft practice offers an alternative mindset already familiar with negotiating sustainable practice within an industrialised context. The question arises, what is it about these potentially Endangered Subjects that engages students, and is there something particular about practice based knowledge

that might translate into a larger model for sustainability? These are not questions that yield easily to quantitative analysis but qualitative personal experience has the advantage of revealing subtle insights that are often overlooked in the rush for short term answers.

**Craft Based Practice:**

To identify why so many craft based courses are endangered the Course Directors at the member Institutions were asked for feedback on the proposed definition of Endangered Subjects. Three issues were identified, firstly the use of language and understanding of the nature of 'craft' within the broader social context, secondly, perceptions associated with the decline in student applications, and thirdly, fragile employment opportunities for graduates. These issues were considered within the Institutional context and as a basis for further research into student experience, before considering their relevance to the broader discourse on sustainability.

Firstly, the language surrounding 'craft' and Endangered Subjects was contentious. Whilst there were pragmatic responses reflecting the generalised and inclusive value of the term, others considered that as a concept 'craft' was down graded and devalued. A paradox as the practice it reflected was often flourishing when incorporated into alternatively titled courses such as Contemporary Applied Arts. As Ian Farren, Head of the School of Art and Design at the University of Cumbria, observed, with such controversy over language care must be taken not to let the debate focus on terminology at the expense of the issues to which they refer (2009). In the broader debate on sustainability this is valuable advice as the stakes are high and go far beyond discipline specific rivalries.

The second issue referred to a consistent decline in student applications. Again this was contested as in an expanding student population it was unclear whether the decline was in absolute numbers, or relative to the population as a whole. However, it was agreed that secondary schools contributed to misconceptions of the crafts, and often failed to provide positive information regarding potential career paths available from craft based education. These concerns were particularly worrying as the time spent at school has a significant influence on forming attitudes that shape future lives. These perceptions may in part be due to the small-scale nature of much of the

business activity associated with Endangered Subjects, which fail to make their true economic contribution visible to the communities within which they operated. The individually small scale of business activity, often below the value added tax threshold, resulted in failure to attract government initiatives and access the networks of influence that they generate. Once again, failure to count reduced the opportunity to be counted. It is interesting to note that at Cumbria, where these findings were analysed, they responded with a huge leap of faith and invested many millions of pounds in a new centre for the crafts. Subsequently, the centre has become a catalyst for both traditional and contemporary crafts and has created new networks of influence. Such faith illustrated the necessity for a belief in the value of Endangered Subjects in order to support and actively re-conceptualise value within rapidly evolving markets.

In order to respond to continual change, courses must have the ability to adapt and evolve with the changing context. When the Institutions reflect the broader social context they can more effectively and efficiently integrate into a network of opportunities from schools, business and research, to investment in niche centres of excellence made viable by a global context. A belief in the sustainability of the crafts within the Institutions contributes to a positive cycle of reinforcement, reaching out into the broader social context and creating a viable vision of the future for crafts practice and employment.

The third issue raised by the definition of Endangered Subjects was that of fragile employment opportunities. However, the feedback revealed the perception of fragility was only valid if viewed from traditional concepts of working within company structures. It is debatable whether this structure was ever an appropriate reference for craft subjects. But as higher education embraces widening participation and art schools are congratulated for their openness to concepts of non-traditional learning, it is strange that the value of non-traditional employment is not acknowledged. Especially as recent research by Stephanie Taylor and Karen Littleton (2008) on creative careers identified self-employment as one of the principal attractions of the crafts based professions. Creative occupations are often appreciated for offering a *'quality of life rather than an income'* (Taylor and Littleton, 2008, p.69). This is not to dismiss the economic imperative but to illustrate the power of crafts to shape the structure of peoples lives. As Taylor and Littleton observed, many

crafts people have a 'double life' where *'another occupation or even a full second career is maintained separately alongside creative work'* (2008, p.83). This may be indicative of future trends, as 'traditional' models of employment become a thing of the past. Crafts practitioners are familiar with flexible methods required to sustain their practice in changing times. The Endangered Subjects should be congratulated, rather than penalised, as these skills have value in the broader employment environment when it has been estimated that by 2025 we will *'hold an average of 19 different jobs during [a] lifetime'* (Press Association, 2004).

Similarly, it is unrealistic to anticipate 60,000 Art and Design students in the UK will immediately find full time employment directly related to their course discipline (Design Council, 2007, siting Higher Education Statistics 2005). The expansion of higher education signals a shift from education for a specific discipline, to education by discipline. Whilst this shift has been implicitly acknowledged by the expansion of higher education in the arts, the implications of these changes to employment appear unresolved. Indeed, in this scenario, the rarity of specialist makers may offer significant advantages compared to other disciplines with larger cohorts. Particularly, as in addition to traditional rural associations with crafts, the culture of the urban maker is strong and recognised as offering advantages of high level skills together with alternative ways of thinking and problem solving (Wright, 2009, p. 27).

From a sustainability perspective, the ability to re-conceive potential and rapidly adapt has advantages that may not be open to large scale, hierarchical organisations. However, recent experience of the economic downturn has shown how large-scale enterprise can distort the market and leverage protection from fear of massive failure. This protectionism may have short-term relevance but illustrates the power of established models to maintain their positions and reinforce selective perceptions of value. It is interesting to note that the proposed definition of Endangered Subjects included reference to a decline in student applications but none of the responses referred to Institutional policy relating to this issue. With such a fundamental threat to integral elements of the curriculum it might be anticipated that the Institutions would have a statement of aims and an understanding of how the constituent disciplines contribute to these goals.

Absence of clearly defined aims allows elements to be added or removed without consideration of the impact to what remains. In the absence of clearly defined aims the Institutions are vulnerable to external pressure, rather than supported by evidence and proactive within the discourse and professional community. The NALN project aimed to provide evidence to defend the Endangered Subjects against perceptions of a decline in student applications. This questioned why students chose to study, or not to study Endangered Subjects and considered the implications for sustainable practice, as practitioners, Institutions and within the broader context. To allow comparison between disciplines, student experience from a range of flourishing and Endangered Subject courses were reviewed. Twenty Interactive Media students from The London College of Communication, University of the Arts London, completed questionnaires and a further twenty graduates from a range of Endangered Subjects were interviewed.

**Student Experience:**

The Interactive Media masters students came from a wide range of previous cultural and academic experience, from engineering, science, psychology to graphic design, advertising and media degrees. Stephen Brookfield's Critical Incident Questionnaire formed the basis of the questions and was referenced to prompt reflection on decisions to study and on perceptions of Interactive Media (1995, p.114). The questionnaire asked for their first experience of craft, why they decided not to study craft subjects, why they chose to study Interactive Media, what was the best, the hardest, the most puzzling and most surprising thing about what they did. Of all the responses the largest area of agreement was that the majority of students, sixteen out of twenty, had experienced craft early in their lives, either at home or pre-school and five continued to consider craft as a hobby. However, they chose Interactive Media because they clearly understood a progression in their learning, connected to personal perceptions of value, integrated within a wide range of different applications with relevance to the future. Their practice was contextualised beyond themselves, they believed their practice was sustainable and relevant to the future. The connections, integration and speed of development surprised Fernanda Tak (LCC) who thought, *'this world cannot thrive without multi media.'* Such conviction may come at a price, as Ludovic Chok (LCC) was puzzled that they *'create needs rather than solutions.'*

To probe these responses, the questionnaire was extended to form the basis for semi structured interviews with graduates from Endangered Subjects. The graduates represented a range of disciplines from glass, black-smithing, furniture making and embroidery, to ceramics, weave, metal work, print, book arts and crafts. Graduates from each Institution were represented and reflected different backgrounds and life experience, ages, sex and cultural diversity. Some straight from school, whilst others were mature students who had previously had alternative careers for many years before returning to study. Their early experience of craft appeared to be similar to students from Interactive Media and focused on activities in the home. However, the responses often specified the involvement of a parent or grandparents encouragement, as Helen Little remembered, *'I learnt from her just simply because I wanted to be with my grandma.'* (UC)

Although experiences at school were mentioned, these rarely reflected positive memories. Lydia Hardwick remembered *'we had to go out of the classroom once a fortnight, a big woman, three or four of us at a time and made bookmarks but we'd only be outside for twenty minutes and do about three stitches, get them wrong and she'd unpick them.'* (CCW) Craft was distinguished from Art at school, where Art was considered to be drawing and painting and only encouraged if you were not 'traditionally academic.' Jan Hicks remembered *'Grammar school girls got pushed into sciences because art was something you did as a hobby.'* (UC) Jan went onto a degree in Micro Biology and Genetics at Leeds and spent twenty years in medical publishing before buying a farm in Cumbria and raising angora goats and sheep from which see dyes her own yarn for weaving. Jan kept knitting and sewing as a hobby and after a City and Guilds course went onto complete a degree in Contemporary Applied Arts at the University of Cumbria and plans to progress to the masters program.

The importance of working with materials was a common theme. As Lydia Hardwick reflected, *'there is no real decision to study craft, it is a decision to use materials in a way that would actively convey a concept.'* (CCW) To explore concepts through materials, to learn through making and express feelings as a creative and sometimes therapeutic act. Well being, through self expression was an important theme as a number of interviewees spoke freely

about significant mental health issues that had been mediated through their practice. A sense of fulfilment was valued, as Helen Little remembered advice from her father; *'he said, do you know what Helen, you find a job you love and you'll never work a day again in your life.'* (UC) Encouragement from family and tutors was clearly important. However, specific selection of a discipline area was principally focused around the interaction between materials, techniques and the desire to engage with the process of making. Jon Twin valued the range of skills associated with book arts and crafts but loved *'the fact that you are holding someone's thoughts and knowledge, it's just that manifestation of things that are meant to be intangible, it's great.'* (LCC) Thoughts like these were expanded when asked for the best thing about what they were doing. *'How happy it makes me feel'* (Helen Little, UC), *'I can be myself through my work,'* (Lianne Winter, HCA) *'I have a real passion for my work.'* (Lindy Mitchley, UCA) Whilst the hardest thing orientated around time management, self-promotion, making a living and *'not being valued, I was one, I never thought ceramic was valuable. I always thought this is a secondary thing and not fine art.'* (Belgin Bozsahin, CCW) The graduates were often puzzled about where their work might fit in and that *'the markets between Art and Design are so divided.'* (Andrea Martin, CSM) Whilst Daniel Evans (UC) was pleasantly surprised that he still loved wood and making furniture after giving up a steady living, re-mortgaging his house and commuting more than sixty miles each way, every day, to complete his course. This level of commitment was clear in the graduate's advice to anyone considering this path, as although these subjects may be challenging and frustrating, all the interviewees were positive in their endorsements.

**Reflecting on Endangered Subjects:**

What did these interviews reveal about why people decide to study, or not to study Endangered Subjects? It appeared not so much a conscious decision to study, but more a feeling that they were compelled to follow this direction, whether as part of the education system, or therapeutic response, desire to express themselves or change of careers. The materials, processes and people involved drew them in and helped to channel their motivations. Although often associated with an ultimate sense of well being, this is not a simple or comfortable process as these issues reflect elements often explored by thinking through making and it can be difficult to articulate the intellectual processes involved. This does not diminish the value of the intellectual

process but rather reveals important aspects often overlooked by 'traditional' concepts of academic ability. A broader view of intelligence is proposed by Howard Gardner, originator of the concept of multiple forms of intelligence. Gardner proposes a definition of intelligence as; *'a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture.'* (1999, p.33 / 34) Perceptions of intellectual value are culturally based. As the culture changes to value sustainability so will assessments of value.

The concept of multiple intelligence allows for alternative perceptions of value and has been incorporated into pedagogic theories and, although not uncontested, acceptance of different learning styles. This does not mean that fundamental aims are amended for each learning style but that there is an acknowledgement that there are different ways to achieve these goals. This is implicitly recognised by the Quality Assurance Agency who state; *'learning in art and design stimulates the development of an enquiring, analytical and creative approach, and encourages the acquisition of independent judgement and critical self awareness.'* (2002, p.2) Where 'traditional' concepts of intelligence may have driven Western industrialisation, these concepts are challenged by sustainability to find new models. As craft practice offers alternative models of thinking, why are applications to Endangered Subjects falling?

Over the last thirty years there has been a huge expansion of consumer culture within Western economies and increasingly throughout the East. Low production costs in Asia and the development of computer technology has enabled many more products to be designed, desired and consumed. Craft has become expensive and the notion of hand made devalued against the polish of the machine aesthetic. Whilst technological innovation has created a global market, the real cost of production has become disconnected and absent from the act of consumption. These patterns of consumption frame expectations and the perceptions of value that substantiate social hierarchies of power. At a recent conference on Widening Participation Penny Burke described how hierarchies of power within Institutions *'shape struggles over access and participation.'* (2009) These inequalities and expectations have combined within perceptions of value to create a confluence of prejudice against the crafts within the Institutions.

Five significant areas of prejudice have been identified. Firstly as Burke notes there is a divide between teaching and research, where research carries higher esteem, recognised by the RAE and contributes to notions of *'world classness'*. The move from Art Schools to Universities has extended these perceptions into the craft subjects. Tutors for these 'soft' subjects are doubly dammed, firstly by teaching and secondly for doing so in non-research rich areas. Once again the crafts are poorly judged by inappropriate, external and selective measure of excellence. In addition, in many of the Endangered Subjects the majority of students are female, so much so that interviewee Lizzie Searle described it as *'a stigma.'* (UC) Burke notes this issue and identifies the power of sexual inequality within the Institutions. This is compounded within Endangered Subjects by increasing numbers of mature students. As Institutions focus on the needs of younger students, there is a danger of age discrimination under the Disability Discrimination Act of 2006. When these issues are combined with the general opinion of the degraded value of the term 'craft', by its association with hobbies and the amateur, and the outlook is bleak. However, the cultural lag that informs these views is outdated and open to debate.

The context has changed and so a defence may emerge from a reappraisal of the areas of attack. What is wrong with the amateur and the enthusiast? Many of the graduates interviewed sited the positive influence of relatives who practised craft as a hobby. These enthusiasts often attend evening classes, which were also recommended by graduates as an excellent way to try a discipline before committing to a degree course. For example, Rebecca Fairclough (UCA) and Lindy Mitchley (UCA) both signed up for a degree in glass making without any previous hands on experience. Rebecca followed a childhood passion for glass and Lindy the advice of a tutor but both expressed the desire that they had more tangible reasons for making their choices, if only as justification for the support of their families. Crafts and crafts people need to be supported within an environment where craft is valued and appreciated. An active and enthusiastic amateur community is a vital asset. Much of the growth of the internet has been possible because of the inclusive embrace of the amateur, both young and old. In an ageing population the demographic shift will have far a reaching impact as we all live longer and may follow multiple career paths. A range of options, not least those that lead to

opportunities for self-employment and self-expression, offer welcome additions. Similarly, the role of women in society is changing and financial independence alters consumer behaviour. Change leads to re-evaluation and research. Rising student numbers has forced a reappraisal of teaching methods and an increase in pedagogic research, where increasingly experiential learning by doing is held as an exemplar of practice. And craft itself, as this conference attests, is engaging in research and challenging outdated perceptions. Each area of prejudice challenged when considered from alternative perspectives and criteria for assessment.

Hierarchies of power maintain their power by defining the criteria against which success is measured and from which expectations are formed. Once embedded these expectations become implicit and as such, rarely interrogated for the validity of the values they convey. Making the knowledge embedded in practice explicit is not an end in itself. It is in order to interrogate the value of the process in action. For both individual students and the Institutions to contextualise their practice and their place in the future. Raising awareness of the intellectual potential in practice prompts an understanding of the need to invest in and nurture the process. Without explicit understanding, the implicit knowledge embedded in practice remains locked into and accessible only through practice, rather than as a transferable asset. As disciplines with transferable applications craft practice can contribute to the discourse on sustainability.

This language echoes the economic tenor of the market place but does not endorse this ethos as the basis for decision making. For as Michael Sandel, this years Reith Lecturer, observed:
*'Some of the good things in life are corrupted or degraded if turned into commodities, so to decide when to use markets, it's not enough to think about efficiency; we have also to decide how to value the goods in question. Health, education, national defence, criminal justice, environmental protection and so on – these are moral and political questions, not merely economic ones.'*
(2009)

Sandel points out that *'we have drifted from having a market economy to being a market society'* (2009) where social institutions ethos and orientations has evolved through the adoption of market driven models. Certainly some of

the closures of crafts based courses have been rationalised using simplistic economics based on relative use of space and tuition. Economic reality is undoubtedly important but equally so is a long-term sustainable vision of the purpose of the Institutions within society and for the individuals they educate.

Education is a process of transformation. Education through craft transforms people by the processes they use in the products they make and desire. Learning to make objects transforms people with particular talents in particular ways. Endangered Subjects transforms people by crafting minds through the craft of their practice. Whilst we cannot predict the specific requirements for a sustainable future, we can be sure that the issues raised are so diverse as to need every intellectual asset available. Individually, socially and globally, craft practice offers broadly based and positive returns on the investment.

Many thanks to all the students and graduates who gave their time and kind consideration to make this research possible. Thank you.

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**PLYMOUTH COLLEGE OF ART ANNOUNCE:**

# MAKING FUTURES
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Title: **Only Connect,**
**21st century cultural practice, thinking and making across continents.**
(*Forster E. M. Howards End, Edward Arnold, London 1910)

Authors: Simon Fraser and Elizabeth Wright
Central Saint Martins College of Art and Design,
University of the Arts London.

**Abstract:**
In recent years a number of European and American arts institutions have been trialling projects where students are exposed to short term engagement with craft / artisanal communities in the developing world. These projects raise questions about student expectations of cultural engagement and expose ambiguous ethical parameters. In MA Design; Ceramics Furniture Jewellery at Central Saint Martins, University of the Arts London, we believe that a more considered and longer term view is necessary.

Key issues identified in the day to day experience of our researchers and tutors, are politics, geography, skill, visual language, cultural ownership, economics, industry, endangered craft and luxury consumption.

It is our experience that researchers often join us looking to find new models for craft practice and theory. With current thinking frequently dominated by a set of educational paradigms defining success mainly through the unique artefact or batch production model, it is rare to explore how craft methodologies can provide alternative perspectives.

In the light of the questions raised by the conference statement, it is timely to review a series of projects from the course over the past seven years to identify transferable themes. As with all areas of cultural production the issues raised are not necessarily discrete or indeed easily divorced from each other. For example, de-skilling is a global phenomenon not a disease of western, or should we say first world Art and Design colleges. As colleagues will be aware, Japan is struggling with similar issues.

This paper will examine how these ideas have been embedded in Masters level research projects, looking at different approaches to high craft and conversely artisan communities, commercial imperatives, long distance relationships, intimate conversations and alternative locations within pure and hybrid craft practice, from craft for crafts sake to craft as an industrial catalyst. These include contemporary artefacts realised from a diverse range of sources; Brazilian ceramics; dug earth ware to bourgeois dining, Thai Niello jewellery; using rural and urban production, Guyanese Wai Wai weaving and mass production thinking, silver and gold wrapped furniture from Jaipur, San People and Botswana silver casting NGO projects, Taiwanese re-commercialisation of rural Chinese embroideries, the silk road re-visited through historic Persian enamelling, cross cultural ceramic practice between Pakistan, Sri Lanka and Japan, endangered European silver filigree and traditional Korean high craft furniture informing industrial innovation.

These examples are defined by a moment in time where researchers have begun to explore a new approach to thinking about crafts role and ability to sustain historical practice in a contemporary context.

From a position of local and global relevance sustained through design and a keen interest in the nature of production, this paper will reflect on the critical indicators from daily experience to examine approaches to problem solving when the practice is resident in different locations, different time zones and often involves many hundreds of years of historic cultural capital.

**The Context:**

This paper considers craft and design practice as a new model for sustainable practice. Not just for the individual practitioner and the crafts as disciplines but

as a contribution to the wider discourse into sustainable futures. This paper interrogates the development of projects within MA Design by Project, Ceramics, Furniture and Jewellery at Central Saint Martins College of Art and Design and the emergence of practice we characterise as 'ethical luxury'. This position is based on an awareness of the particularity of our location, geographically, historically and temporally at Central Saint Martins and an intense respect for the disciplines of craft and design and their foundation in a diversity of cultural practice and in a range of relationships with modernity.

MA Design Ceramics Furniture Jewellery is a 'by project' two year research masters programme which aims to expand methodologies related to design and craft practice to deliver; refined, innovatory and relevant contemporary artefacts. The student profile is strongly international and tends to be older late 20s-50s with a high percentage of industry and practice based professionals rejoining education to reposition career pathways.

Over its seven year history the course has identified a number of continuous research strands linking the work of staff, students and alumni. These issues echo this conferences concern with critical thinking and design practice in relation to artisan, handicraft and fine or courtly crafts projects in different global locations.

The nature of the course allows us a broad based, extensive and ongoing research process. Students establish, a framework that maps the stakeholders / shareholders and constituencies relevant to their project, tracking professional and research encounters and information, later analysing this information in a structured manner. This real world identity is very important as we recognise if a student views their education as being located primarily within an institution, which is geographically, economically and historically located, it risks creating a context rife with assumptions. Real world research helps support strategic thinking for individual projects and establishes market frameworks around cultural identities.

Over recent decades in India, a significant number of initiatives have taken place to bring students and student groups into engagement with, and to the 'assistance' of, craft communities from a wide variety of backgrounds, materials and cultural positions.

Professor Jatin Bhatt of Edusign and late of the National Institute of Fashion Technology, New Delhi has directed some of this process and has written extensively about the subject. Critically as he characterises it, our limitations are defined by the fact we are presently only helpful as designers in relationship to artisan and crafts communities within the *'roles enabled and conceived through design education'.* (Bhatt, 2006.) Bhatt discussed undergraduates seeking a design education. MA Design is a post graduate research community working with designers who are experienced with actual practice knowledge, in the subject area, materially engaged at the outset and able to develop dialogues, share skills or information during the process. This model addresses some of Bhatt's concerns but a question we often ask of an initiative is whether this is welcome in the artisan / craft communities involved. As a discussion on 'gatekeepers' later in this paper will explain, answers are not always straight-forward.

Working at Central Saint Martins, a college that grew from the utopian vision of Arts and Crafts espoused by Lethaby, Morris and their peers, we recognise the position of craft, post industrial revolution and developments in studio practice and industry practice throughout the twentieth century. Beyond United Kingdom (UK) 'studio traditions', global craft and artisan practice is becoming increasingly vulnerable. What Dr Marcus M. Keupp calls *'countries that aim for technology diffusion'* (Keupp. 2009) like China, threaten traditional practice. For example, the survival of India's saris and textile production is threatened as computer scanning enables Chinese automated looms to accurately duplicate historic saris and cheaply reproduce them sometimes in more durable synthetic fibres. These are then sold back into the original niche communities, fatally undercutting handloom weavers and undermining the social structures within the artisan and craft communities. (Crafts Revival Trust, 2005) Within these communities emerging generations of practitioners may reject craft work, which can appear irrelevant, mired both in history and historic structures of class and culture. In comparison employment in information technology industries or industrial units offer the prospect of a more secure 'modern' future. Craft skills and the inter-generational knowledge that go with them, can disappear with frightening speed.

A new wave of cultural practitioners from all parts of the globe, prompted by broader issues around climate change, environment and sustainability are

entering education, aware that cultural sustainability is a given. Frequently as a course, we find expressions of interest in cultural sustainability approached through projects within fragile or vulnerable craft and artisan communities. This raises a raft of questions about the ethicality and effectiveness of such engagements, which are too rarely discussed. The educational paradigm simply adds more layers of complexity.

We believe developing projects such as these requires a long-term commitment to a community, a craft process and to incremental change and development. This needs to be made clear at the outset of any project. Otherwise it becomes educational tourism, disingenuous outsourcing, *'we need to get into Africa quickly it's the next area'* or even worse as a *'cheap way of getting my students taught',* to quote a British academic. Perhaps such thinking apes some of the models of pseudo market competitiveness rife within UK educational institutions but it is rarely helpful to the recipients.

Currently the discourse around approaches to design relationships with historical crafts, artisan communities, the hand made and social change comes mainly from Governments, NGOs or engaged private individuals. Nevertheless the questions raised about the relationship of design practice to craft and to art, challenge the very nature of design and craft practice. Consideration and answers need to come from within the design community, including the design education community. This paper examines a number of the contextual issues that frame practice, within design and craft education and thinking, using examples drawn from projects on MA Design Ceramics, Furniture and Jewellery.

**Ethical Luxury:**

We who live western live styles live in a saturated world of mass 'devalued' luxury.

We essentially exist in a world, luxuriously resourced relative to and dependent on the lives of others less fortunate or more vulnerable. We are part of the richest twenty per cent of nations and account for three-quarters of world income (WBDI, 2006).

In MA Design we are not cynical about luxury. We see luxury as a suitable word in the face of the politicised practice around the development of craft and the types of social consumption needed to support long term specific cultural

practice. We understand luxury as a way of thinking, not luxury as corporate manufacturing. Over the past three decades there has been a concerted corporate effort to extend the meaning of 'luxury' to mass production artefacts. Companies like Gucci promote an 'age of simulacra' where products provide a surface, which by implication, suggests the sensibility of the wearer will be equally refined. In crafts practice it would be counterintuitive to link artefacts to the seasonality of the fashion cycle. The point is that limited seasonal artisan production can make for exclusivity. The market needs to be considered carefully.

To make a sustainable driver for the economic imperatives of craft and artisan communities, luxury or 'high end' production offers a premium price which allows a negotiation of the disparities between the income needs inherent within cross global production systems. In our world of 'perpetual luxury' we have lost the sense of material awareness, and the people and processes upon which such luxury depends. Luxury has become a normative state, encouraging and perpetuating a cycle of cynical consumption.

We propose a redefinition of the concept of luxury, which we continually renegotiate and re-define within projects. Although Luxury is a relative concept and often defined by rarity and exclusiveness, we acknowledge a range of additional criteria; cultural diversity and capital, time quotients, material and material provenance, historic knowledge, embedded talent and professional skill, relevance to contemporary context. For example; although rarity and exclusiveness can appear simple, context, location, and provenance frame Kika Alvarenga's high level and fashion forward jewellery collections. Alvarenga uses Tucum, a fine hand spun palm fibre cord made by the Kraho people of Brazil, traditionally, a sustainable staple and an all purpose community product. Alvarenga's design eye focussed on the natural drape, texture and refinement of the Tucum cord. Linked to childhood memories and the contemporary political sensibilities of Aboriginal communities regarding Brazilian history, Alvarenga explores material values to reveal a native view of the dark complexities of modern Brazil. Such an approach can be mapped onto high fashion methodology and the value of a sustainable approach in this context cannot be overstated. There is an important joint interest here. For sustainable design to be enduring it cannot disengage aesthetic awareness in a simplistic exchange for sustainable production.

This issue of luxury also engages with the issue of craft production for tourism. Where the 'haves come face to face with the have nots' as a holiday experience. Such experiences are often encouraged by campaigning organisations, for example; profit making gap year 'charitable projects'. In contrast, the extensive and long term research from the University of Art and Design Helsinki, World Design Research Group makes interesting reading. The publishing concerning Namibia is too extensive for this paper but the difficulties of thinking through a design industry model in the face of development needs start to emerge.

Whilst the National Art Gallery of Namibia (NAGN) seeks new artefacts to act as *'material signs-memorial documents with content' (*Madisa J. 2006*)* for Namibian identity, activists and designers struggle to create a Namibian *'design pride'* (Becker M. H. 2006) to sustain commercial products. This process questions which cultural perspective should be prioritised when manipulating the 'authentic artefact' into commercial products for other cultures? This is where designers are so important in creating a global product but so at risk when at the same time their actions expose un-interrogated cultural perspectives. Karin Le Roux in her paper, *Developing the Namibian craft sector; 1991-2004* discusses indigenous local design language. Having noted the lack of formal education, let alone art & design education she writes; *'The inherent creativity and dexterity of almost all producers has been extraordinary. Unfortunately popular commercial images and/or products from women's popular magazines or church bazaars often influence producers who are left alone to their own design preferences'.* (2006)

Setting aside the arguments around the dangers of appropriation, if design interventions in strategic craft development support the origination of genuine new artefacts of cultural heritage; to which heritage might the resulting artefacts belong and is this cultural confusion really problematic? This is a reoccurring question, for example; the re-cutting, re-setting and restaging of the extraordinary Murghal and nineteenth-century gem stones belonging to the Royal Families of India during the 1920s and 1930s by the Parisian firm of Cartier offers an elegant extreme. The resulting artefacts of this stunning destruction of three hundred years of courtly historical artefacts, by their keepers, seamlessly encode the material to the point of invisibility under the

burnished patina of the Cartier brand. The undeniable success of this process and the sustained desirability of these very artefacts ninety years later, to the South Asian communities and diasporas alone, is testament to the quality of the design. Historical artefacts from the Murghal Court and Cartier's confections are both culturally valuable today as each history has integrity and authenticity. This raises a question we ask our students; what will be the historic value of their design interventions in crafts in the future?

The intervention of design into areas categorised as 'pure' cultural practices quite understandably engenders anxiety amongst consumer groups, patrons, collectors and cultural anthropologists who want to see the 'preservation' and continuation of historic lifestyles. However, consider Art theorist Peter Osborne's thoughts as he examines texts by Michel de Certeaus and Marc Augé establishing the idea of a 'non-place'. Auge describes the invasion of space by text and "instructions for use" such as *'you are now entering Beaujolais region'* (Osborne P. 2001). If we accept how Art is subject to this experience, where textual statement is integral to the expression of the art object (for an example see Jenny Holzer 'Blue Blue' 2003) then we can recognise similarities when we see them in craft practice. In direct relationship Osborne's interest we might coin the phrase, *'You are now in the world of the Rajasthani Palaces'.* Consider the confusion of tribal, artisanal and courtly crafts offered under such a heading to a cynical western consumer. If cultural capital is to be manipulated for external tourist consumption, when these communities have been trading for a hundred years or more, then the relationship to design is but one change amongst many.

MA Design embraces the concept of luxury because we identify those things within the mix that add value as a result of collaboration with the producer communities. Too often we see promoters of ethically made 'craft' suggest that the negotiation itself negates offering additional benefits in exchange for premium pricing, as though the promise of 'sustainability' were sufficient exchange. Neither concept is sufficiently considered and when clumsily combined devalue each other. One of the ideas we seek through such engagement are artefacts which become cultural engines of change, bridging craft production and design practice.

By breaking down and examining the complex network of issues around the definition and creation of luxury products it becomes possible to frame, or reframe historical practice though its constituent elements. Research reports, field work blogs, intensive documentation, model making and iterations all help support such decision making during project development. By working across cultures, two, three or even four at one time, it is possible to leverage benefits from different perspectives and can free an indigenous maker from the restrictions of the local market. For example, Maham Chesti's project developed terracotta ceramics in Sri Lanka. Chesti is a Pakistani woman, on a London based course where her project was conceived in relation to the disappearance of markets for terracotta products, such as water vessels, in south Asia. Her practice took place in Sri Lanka through a welcoming production contact she had made during her research. The potters who worked with Chesti were led by a senior woman who had been trained in 'Japanese' Ceramic traditions by a Dutch potter. This potter had in turn learnt Japanese Ceramics themselves informed by Korean traditions of practice. Inevitably, the 'identities' of the final artefacts were far more than the sum of their constituent parts.

**Design and Craft Innovation:**

The identity of 'design' in relation to craft practice is a contested issue. Depending on the text and audience the design community can be seen as saviour, demon, or in some cases as thief. Nevertheless many governmental organisations and non-governmental organisations promote the use of 'trend' forecasting. This is problematic for two reasons; firstly, by using trend forecasts originating from western designers, the initial cultural capital from which those trends were derived is promoted as of value, back to the original owners of such cultural capital but through the trend forecasters aesthetic. If this year, the Inca trail is 'in', then the original cultural capital is only understood to have value after is has been translated into and assimilated by a trend forecaster. Given the time that it takes to travel through the trend forecast system, the research and development, sampling and production, the resulting degradation of the aesthetic leads to products that are often low risk, homogenised and vulnerable low return artefacts. Such homogeneity is boring and reduces the opportunity for alternative outcomes and evolutionary thinking. This is worrying as such flawed products are in direct completion with industrialised manufacture, which draws from the same trend forecast, and which has a

greater capacity to respond faster. Whilst this is a logical response to the risk of engaging with a design led market place, it puts local innovation into a passive and subservient relationship to western trend setting and value systems.

There a second issue associated with this relationship. To offer open access to trend forecasting based on current design industry output effectively denies that this research and development is paid for by someone. It is an ethically ambiguous area. The most ruthless strands of the design industry use this process to circumvent intellectual copyright. However, you pay for what you get and often such use of trend forecasting is similar to dumping surplus farm production; the tail ends of trends and ideas are recycled cheaply into such forecasts. In addition, and similarly to the food dumping analogy, this process inhibits local innovation and development of intellectual capital within host communities.

If agencies subscribe to an open source model, why not an open source model for design? How can designers be expected to develop new and innovatory models that define and redefine practice without engagement? There is a danger that we find ourselves back in a paternalistic model, where the product of our intellect becomes redefined and at best handed out as a charitable gift. Sustainability requires balance and mutual respect. Is it not more sustainable to identify those areas of added value that are particular characteristics of craft in order to justify extra cost? This is where we believe our discourse can make a significant contribution – to provide an argument to bridge the gap between consumer expectations framed by experience of industrialised products and the 'benefits' of craft objects and practitioners.

**Multiple Layers of Time:**

What characterises many of our current conversations around craft practice is the collapsing nature of timelines and a failure to consider what might be meant as craft 'modernity'. Much of the writing and thinking around working with craft and artisan communities is bedevilled by assumptions about time. Considering the concept of 'cultural time', it is interesting to refer again to Osbourne's thoughts on 'cultural form' in Art and *'the transformation of western art under the conditions of an emergent capitalist modernity'* (2001). Osbourne considers a number of ideas which are interesting when applied to the current

discussions about how we view time in relation to 'craft' and artisanship. Osborne states,

*'Modernity is the name for an actually existing socially realised temporal formalism that is constitutive of certain formations of subjectivity. It is in this sense, that it is a distinctively cultural category; the fundamental form of time-consciousness in capitalist societies.'* (2001 p.183)

He then proffers three theses;

*'1. we live in an emergent global modernity*

*2. at the same time there are many modernities; but the logic of multiplicity of these modernities is different- has different conceptual shape- from the multiplicity of previous forms* [because]

*3. global modernity is not fundamentally geo politically about the hegemony of the West but about the hegemony of capital.'* (2001 p.184)

This confusion between what might be modern and what might be modern through the changing structure of capital, which is moving from an economy of barter to a proto-capitalist structure, bedevils thinking about artisanship and sustaining its development. Our notion of 'time' associates activities with historic periods of time, within an assumed desire for a progression to our 'modernity'. Therefore, current design and craft writers often assume we all exist in a 'post industrial society', but within the developing world many of our current arguments around craft and the exploration of design / craft practice are exposed as assumptions. In a global context, craft operates within a continuum, from pre industrial to post industrial practice. It is this continuum, rather than disconnected frames of reference, which makes approaching 'commonsense' thinking about the relationship of design intervention in craft complex.

We believe there are important opportunities if we are not all in the industrial age. That we are in continuous and parallel historical time zones. There are valuable differences, each age has its own wisdom and that is what makes the preservation and dissemination of implicit craft knowledge(s) important. Neither we, nor the host community can predict what information we all might need to share, or utilise in the future. To sustain cultural 'knowledges', there needs to be recognition of relevance to all the participants, including the consumer.

This fusion of knowledge(s), considered through multi layers of time, allows the valuable differences in each age to be articulated and acknowledged. We look afresh at different models, from different times and places concurrently. Naturally this is not a preservationist position. We believe that almost all craft practices change over time and as they develop bring new opportunities to their communities. However, this perspective is not universally accepted.

**Social Change and Gate Keepers:**

More often than not as a designer the initial conversation with a community is through a gate keeper. Gate keepers can be commercial agents, village elders, landlords, Government departments or NGO's, engaging social hierarchies of gender, caste or class, bureaucracy, state funding (both local and international), all of which bring their own political agendas. Experience has shown gate keepers are powerful catalysts who can either empower or frustrate a project. In our experience a number have been welcoming, until they saw the level of community engagement and innovation emerging from projects. Then suddenly the whole production process goes into reverse and despite previous engagement, meetings and agreements, 'problems' occur. External innovation, despite its potential to bring new income streams can upset jealously guarded power and control structures. In the following examples we leave the students un-named to respect the confidentiality and sensitivity of the situations surrounding their projects.

The development of a collection of Niello jewellery in Thailand provided many surprises. The student worked with a key worker located in a Niello producing village in south of the country who was supported by a charitable Trust, the patron of which was the Queen of Thailand. This created issues for the student, as, in common with many Thai people, the Royal family is highly revered and the Trust and the Queen were one and the same as far as the student was concerned. The project also involved working with a new industrial factory in the capital Bangkok. Although initial south Thailand production sampling went very well, finalising the design work raised a number of issues and cultural anxieties. The key worker in the village did not personally like the designs and was unsure about giving permission. The cost of the sample pieces put into perspective the wages earned by the community for traditional artefacts and it became unclear where and how income was being allocated. It became clear that it was difficult to confirm to the community why the project might have

value. That sample collection made in the village for her Masters was flawed but the subsequent factory collection was successful.

Financial issues and raising funding in the UK for location specific projects outside of Europe can be complex and often run into local corruption issues. For example another South Asian project would have been forced to achieve its not insubstantial goals on just twelve per cent of the allocated. Eighty eight percent would have been required for 'infrastructure overheads and running costs' taken by numerous layers of Government hierarchies and local agents. In this instance the project was relocated to a more viable location and went ahead with aplomb. The student learnt valuable lessons and developed outstanding negotiation skills. Each case is different, these issues are particularly sensitive and it is essential not to adopt a simplistic expectation or a 'them' and 'us' mentality.

Design and craft need to be seen within a delicate balance of the issues around social design and design responsibility. In *'The politics of the artificial'* (1995) Margolin distinguishes design professionalism from charitable, or pro bono assistance., to be sustainable, such practice cannot be free. To take an economic position, in relation to design assistance, risks running counter to the emerging consensus within artisan and craft aid groups that design should be taught and generated within artisan communities, not 'imposed' from outside by design professionals. However we see this position as one element in a range of strategies, for as Bhatt observes of design and craft practice through educational institutions;
*If the professional design programmes with the best of selected and talented students require 3-4 years of full time education for them to become professionals it is difficult to visualise any significant change through the short bursts of training in the artisans who are far removed from the market context they need to penetrate.* (Bhatt 2008.)

In education, we need to consider who we are working with and what is the purpose of this education. If education is a transformative experience, then, transformation should be a joint process with outside design communities, alongside rigorous academic thinking about the structures of markets, cultural identities, geographical indices, et al., indeed the list is extensive. Essentially,

and as espoused by John Thackara in his *'Doors of Perception'* project, this needs to be a *'collaborative approach'.* (Thackara 2005)

If we believe that collaborative practice often leads to innovation; then development or perhaps redevelopment of craft production at the highest level has to be a collaborative process with extraordinary breadth. For example, Gungan Gupta's Silver and Gold Wrapped Throne project 2006 involved support and information from the staff team, which includes cultural specialists, precious metal workers, furniture and product designers and technicians, all supporting the contemporary design thinking. Lending support were the Victoria and Albert museum including Dr. Amin Jaffer, curator of the Indian collections, The National Maritime Museum, Greenwich, the artisan communities of Jaipur, which covered silver work, temple gold leafing, furniture and craftsman production in New Delhi, wood sourcing, and courtly craft production specialists and exporters. All made valuable contributions to realise one artefact.

Gupta's project illustrates the internal tension between the myth of the individual and the embedded knowledge born of collaboration, which is by implication where craft is vulnerable. As the east adopts or embraces the concept of western individualism this increases the tension. It also makes crafts less desirable within local cultures, redolent as they are with community and collaborative associations. This threatens craft practice from within their own cultures, as they are devalued through westernised perspectives on practice and the implied perfection of the high gloss machine aesthetic.

MA Design operates from within a design tradition that has links to the richness and humanity of the hand made and is familiar with the concept of social change through design education. The embedded and implicit knowledge base of craft communities, in a knowledge economy, means that craft communities are now at risk because they are rarely able to access and consider effectively the uses of such information.

This paper exposes discussions generated by the research and practice of staff and students on MA Design; Ceramics, Furniture, Jewellery. Thinking through these issues, individually and as a group, unpacking and interrogating our findings, has encouraged us to take nothing for granted. All of the models discussed in this paper have elements that need to be resolved but it is important and necessary to try and to risk failure.

Assessments of success and failure are complex and contested; there are a lot of conflicting and sometimes contradictory targets to be met. This is why long term engagements are important. The nature of practice based work however allows everyone to *see touch handle and use* the outcomes and to evaluate them in many different environments. Working with micro production and small producers in developing countries changes the 'rules'. It is important that the 'designer' working from the more secure position evaluates and considers the risk of failure, so that if possible, the impact of failure errs on the side of the designer, not the producer. This level of risk contributes to 'ethical luxury' in this context. Within this model potentially 'passive and subservient' players should, have the opportunity to become proactive and to redefine the context of what is sustainable and global, not one size fits all.

Industrial practice and marketing encourages us to embrace the abstract idea of the 'ideal user'. If Craft practice uses this model within limited criteria, it disengages the designer and the consumer from the harder realities of the commercial market place. This is unsustainable. Sustainable design and craft practice requires considering a broader range of criteria, as sustainable commercial design like any other in the capital market place needs to think deeply about a 'consumer'.

Sustainability, as it is currently understood, as a vaguely ethical position, is of itself insufficient for everyone to embrace. For those of us brought up with the privileges of western cultures, and all of those who aspire to them, the additional benefits of sustaining craft practice will have to be made desirable and explicit to out gun the habits of a lifetime and the iconography of unsustainable privilege. Design has always created desire; we now have to define what this desire might be for Sustainable Futures.

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Trends and traditions

# Negotiating different cultural models in relation to sustainable craft and artisan production

**N.B.** Where reference is made to images please refer to the web-site, the images removed in this file for copy write compliance.

**Simon Fraser**
Central Saint Martins College of Art and Design, University of the Arts London

**Ulrike Oberlack**
Central Saint Martins College of Art and Design, University of the Arts London

**Elizabeth Wright**
Central Saint Martins College of Art and Design, University of the Arts London

If the identity of 'design' as a practice is contested then the relationship of design and designers to craft and craft practices can be hugely confused. This lack of clarity can encourage non-design based organisations to promote the use of 'trend forecasting' as a panacea to the design dilemma associated with craft production for non-traditional markets. Consequently fashion sensitive trends become perceived as the driving force of design-led consumption. In this context how do we understand what 'trend forecasting' is and *becomes* when used in this manner? How does it contribute or not to the sustainability of local design cultures?

This paper examines how these challenges have been interrogated and experienced through practice at Masters Level at Central Saint Martins College of Art and Design. It seeks sustainable strategies for design and craft drawing on a diverse range of examples to illustrate contemporary artefacts realised from a diverse range of projects, sources and geographical locations.

# Introduction

The initial use of trend forecasts originates from the global centres of design promotion where cultural capital associated with craft practice is regularly adopted to add authenticity to rapidly moving consumer cycles. What issues does this raise for artisan and craft communities?

For craft communities referencing trend forecasting may appear a logical response to the risk of engaging with a design-led market. However, does this strategy put local innovation into a passive or subservient relationship to consumer-led value systems and inhibit the development of intellectual capital within host communities?

Is it not more sustainable to identify those areas of added value that are specific to the qualities and characteristics of particular craft traditions and communities, in order to create products that have a longer term place within a contemporary market context? How can a discourse between the various stakeholders from design, craft and artisan communities make a significant contribution to such issues? In this context we need to acknowledge that there are different types of trend forecasting and use of trend information within design processes. In this paper we discuss how different forms of market and context intelligence might be used within design projects that involve craft and artisan communities.

# Why trend forecasting?

Why is it relevant to talk about trend forecasting in relationship to the sustainability of craft and artisan production? Increasingly local and indigenous markets are affected by shifts in consumer attitudes and behaviours in response to globalisation and industrialization that threatens traditional craft practice. If crafts or artisan communities want to develop products that are relevant to contemporary commercial markets, local, indigenous or export, then they will be affected by consumer trends.

Trend forecasting contributes to the process where industrialised companies attempt to identify and interpret changes in consumer attitudes and behaviour in order to respond to their markets, to anticipate consumer desires and 'needs' and to reduce perceptions of commercial risk. However, this is not a simple task. There are different consumption systems and cycles within the industrialised context. If traditional crafts want to compete within the international market place and industrialised products, there can be a conflict between the different production and consumption cycles, for example, speed of production, scope for diversification, scalability etc. Each of these issues are driven by specific contextual assumptions. Not least that technological enablers have consequences within cultures familiar with and conditioned by concepts of obsolescence. These assumptions have implications for the sustainability of crafts consumption viewed within these expectations

# What is 'trend forecasting'?

Historically 'aesthetic' trend forecasting originated in the fashion industry in the mid nineteenth century, with the first fashion trend consultancy opening in New York in 1927. Post Second World War future casting, the long-term macro economic and social planning process, was developed by the American military and later adapted by large business corporations. At the same time advertising agencies formally began to study consumer behaviour (Higham (2009) p.44-45).

During the 1960s, when the interest in newness and innovation was at the forefront of western social thinking, the word 'trend' moved from scientific usage into social commentary. 'Trend' has come to mean 'a prevailing tendency, an inclination, of statistically detectable change or of current style or preference (Higham (2009) p 14-15).

Today there are at least three different types of contemporary trend approaches each with different time horizons. These are different lenses through which to consider the future, each with different focal lengths and focusing on different cycles and different aspects of society(ies), geography, etc.

Retail, brand and aesthetic trend forecasting are perhaps most familiarly understood to represent trend forecasting within the consumer context. The general assumption is that a trend forecast concerns the

broadly based aesthetic information of, colour, texture, silhouette, form and mood or 'look' indicators for the next production cycle. This perception is now widely utilised across clothing, consumer products and interiors industries. Viewed against the diagram it can be appreciated what an extremely short time-scale trend forecasts cover in reality, perhaps as little as eighteen months.

In contrast to the short cycles of trend forecasting, future casting works with timelines from one year to perhaps ten years ahead. In the consumer context, future casting is less densely referenced than trend forecasting, is likely to use scenario techniques and to be part of a medium term commercial or governmental strategy. For example, driven by the need to source the requisite chemicals to manufacture dye colours, the textile industry practices the use of long term colour charts up to eight or nine years ahead. Macro scenarios, or what is sometimes termed Futurology or Futures Studies covers the longest-term view. Macro scenarios examine long-term cycles in economics, governmental policy, the environment, social statistical feedback, and technological innovations in order to look at possible, probable and preferable future scenarios.

These different types of forecasting become overlaid and influence each other. Taken together they provide a contextual awareness that fuels design practice. Trend forecasting, by its very nature, is not about predicting the future, but 'taking the pulse' and making an educated 'guess' based on a contextual awareness. Such sensitivity cannot be achieved by buying in a short term 'look book'.

# Why use trends?

With the absence of alternative models many non-design based organisations promote the use of 'trend forecasting' as a panacea to the design dilemma associated with craft production for non-traditional markets for craft artefacts. Non Governmental Organisations (NGOs) such as the CBI Centre for the Promotion of Imports from Developing Countries, The Netherlands, provide market information, trend forecasting and business advice to craft and artisan based communities or companies who wish to enter western industrialised markets.

Whilst in most cases this trend information is free or low cost, access to market information and trend forecasting allows craft and artisan communities or companies insight into potential new markets and contexts for their products. However, the use of this information can be problematic.

For example, this mood board (images removed in this file for copy write compliance, go to web-site to see images) from the CBI website defines a graphic trend in fashion for Autumn 2010. The illustrations include pictures of garments from leading fashion designers from autumn winter 2009 collections, which have been in the public domain as images since spring 2009. This time-frame means anyone referencing this trend forecast today, will at best begin product development in the middle to later stages of the trend.

Whilst the fashion industry with its notoriously short trend cycles, might be an extreme example, similar patterns of adoption can now be detected in other associated sectors. As fashion brands have diversified into home wares and ultimately into lifestyle brands, shorter trend cycles have started to appear in related product areas. Noticeably each fashion 'season' Missoni and Kenzo have striking surface designs for tableware (The Times (2005)). Armani has designed a range of hotels and on the European 'high street' Zara has gone into ceramic production. These examples raise the question, how long before this is a global phenomenon and seasonal trend forecasting dominates all product areas?

For designers and design companies who work within these systems this process has an integrated logic. They understand the changing nature of their suppliers and can amalgamate the cycles around changes in production, supply chains, target markets and market competitors. Using this range of interlinked and inter-dependant information to contextualise their design and creative practice. Indeed this was historically the position of many crafts and artisan communities who worked in smaller more localised frameworks (Tyabji (1998)).

# How does the use of trend forecasting contribute to or challenge the sustainability of local craft and design cultures?

During the development of 'aesthetic' trend forecasting material, craft products often inform the visual imagery of colours, forms and material identities as one strand among many influences. Crafts power to influence the design process often originates from strong photographic images. The two-dimensional visual nature of forecast publications changes the understanding of objects experienced in three dimensions and this influences the creative process. There is a danger as this process risks stripping the particular knowledge embodied in craft from the equation and from any understanding of the value it might contribute. The crafts selected as visual references often include western studio practice, contemporary crafts from global communities, alongside historic craft artefacts from museum and ethnographic collections. This diversity of 'references' 'is possible because craft practitioners are typically perceived to produce 'objects' and not 'product ranges'. Whilst single 'objects' offer the potential of further design exploitation, 'product ranges' come with visible research and development processes that support the associated claims to trademarks and intellectual property (ultra-indigo (2010a)).

For example, the following images have been selected from the July 2010 colour trend forecasting newsletter e:mix (figure 4). The images are of crafted objects and include glass, ceramic, textiles and furniture.
Amongst the imagery only one of the designers is credited by name. In this rush for 'free' market information the concept of intellectual capital of the craft practitioner or designer is overlooked.

In this context global crafts communities accessing trend material produce objects at the end of the commercial cycle and miss the peak of the market because of the development time required to incorporate trend information into the production process. In extreme examples producers are so late to the trend that they receive no benefit at all.

Alternatively, stripped of their original context and use craft items fail to address the needs or aspirations of contemporary audiences. This is unsurprising when these audiences have already seen a more relevant interpretation of these original craft artefacts presented as industrial products. The copy thus defines consumer perceptions of the original object.

In addition, these industrially produced versions will have satiated demand by supplying low cost mass produced products and subsequently destroyed access to a bespoke market for their original higher quality producer groups. The current global trend for printed summer textiles featuring Central Asian Ikat is a classic example. (highheelconfidential.com (2010)) Over the past year or so, there has been an emergence of exquisite hand-woven silk Ikat from Central Asia into the high-end textile markets. Before producer groups or even dealers could establish an effective market foothold, digital scanning has made these fabrics available to mass market manufacture. The extraordinary knowledge embodied in Ikat as a technological and cultural tradition has been subsumed within industrialised print production. Once appropriated in this fashion it becomes perceived as merely a visual device rather than understood as a cultural tradition.

Nevertheless, for many craft communities referencing trend forecasting may appear a logical response to the risk of engaging with a design-led market. However, this strategy puts local innovation into a vulnerable relationship to consumer-led value systems and inhibits the development of intellectual capital within host communities. For although support from trend forecasting material can engender a 'feeling' of security, if the trend forecasts drives the product development within craft communities without an inherent understanding of the craft tradition, the craft process is subjugated to a follower mentality. This shift in mindset changes the reflective conversation within crafts practice from an engagement with materials to following fashion or aping alternative material solutions. 'In extreme cases it can breed a copyist

culture. One of the most difficult issues facing artisan practice today is that the wide spread copyist culture degrades perfectly good crafts.' This observation by designer Patty Johnson (ultra-indigo (2010b)) derives from her intimate knowledge and collaborative fieldwork with, amongst others, the Wai Wai weavers of Guyana, the Etsha Weavers Group, Okavango Delta, and Mabeo Furniture, Botswana.

By relying on trend forecasts local practitioners or those working with them can become estranged from traditional connections. With an un-interrogated idea of traditional craft objects practitioners fail to understand the historic capital within the artefacts and the process of their production and consumption. Without this understanding, alternative scenarios for the craft objects are difficult to envisage. A historically local focus and social value of craft objects make it difficult to see beyond the horizon to alternative perspectives when the context changes. For example, Pakistani roadside terracotta water containers have lost ground to aluminium or plastic alternatives. The unique ability of traditional terracotta to cool water through evaporation and to impart a particular taste is lost to the 'convenience' of contemporary containers. This seemingly small change has had a huge impact on a two thousand year old ceramic culture. This loss was interrogated and re-framed through a sensitive exploration of terracotta as a contemporary tableware material by Maham Anjum-Chesti (2006). However, the local crafts people had become so estranged from this indigenous industry that the project was re-located to Sri Lanka where culturally the material was still valued. The collaboration with Sri Lankan potters and its subsequent press coverage has refocused the global design community on the use of terracotta in the tabletop landscape.

Much of the creativity of 're-envisaging' or 'updating' traditional craft objects to become relevant to contemporary market(s) lies in understanding the potential of the initial object within its full range of original contexts, applications and meanings. From this understanding objects can be re-framed with relevance for new contexts and new markets. With this knowledge the object can be re-accessed and transformed through design. This contextual awareness, that allows creative re-interpretation, is one of the assets that a contemporary designer can bring to a collaborative process with artisan communities. Arabel Lebrusan (2007) is an exemplar, working with silver filigree, an endangered craft in her native Spain. Her field research revealed only two remaining masters of Spanish filigree still practicing. Her MA project created two bodies of work, a truly extraordinary full scale Mantilla in silver filigree and an award winning, commercially viable range of gold and silver filigree jewellery.

In the MA Design Ceramics, Furniture or Jewellery program at Central Saint Martins College of Art and Design, London, we encourage designers to understand and interpret trends and develop many ways of thinking about how to do this. Our designers bring design knowledge into the craft process and offer alternative ways of thinking through the process of innovation. This can offer communities the ability to be objective about their historical practice and how that practice might change to become relevant in new contexts.

Contextualisation and objectification of practice, whether personal or inherited, are the most difficult tasks for any practitioner. So how does a community learn to be objective about what they actually do? There is no single reality or truth about what objective might mean in this context. It is a process of gathering thoughts and evidence in the minds of the collaborators and then making these explicit. It is important that this is not just an evidence based process but also inspirational (ultra-indigo (2010b)).

Trend forecasting can be used a part of the armoury a designer or a collaborator uses working with a community. But design thinking goes beyond these parameters. As Lila Tyabji (1998) reflects when talking about SEWA Lucknow:

> 'but 'design' in this case went far beyond the cut of a kurta, or the application of new embroidery buta. It included skills upgrading, the documentation and revival of traditional stitches, embroidery motifs and tailoring techniques, the introduction of new kinds of raw material ...sizing, costing, quality control, and production planning and an alternative marketing and promotional strategy...'

There is a temptation to look at trend forecasting for the surface visual information alone as if this in itself was a guarantee of success. In the same way that there is danger in stripping away the contextual and material elements of craft, it is important not to repeat this omission when reading the visuals incorporated in trend prediction. The artefacts referenced as visuals in the forecasts, in themselves incorporate a huge range of additional elements brought together to facilitate the success of the final object. The danger lies in the lack of contextualised knowledge by designers of craft and by craft of design. In order for sustainable practice to emerge, craft, design and industrial design practices have to recognize that each has strengths and limitations and they can learn from each other.

Trend forecasts can be can be a useful aid to contextualisation in order to examine assumptions, hidden knowledge or historical precedents, and to explain alternative cultural models. They can also be used to check where there are connections to current market interests and to review current production.

casts help explain the relevance of current craft and artisan work to buyers, and conversely present and interpret the market place to support the different or unique selling points that craft cultures offer.

# Conclusions

This discussion around the use of trend forecasting by, for or with craft communities takes place against the background of traditional models of production breaking down as lead times and traditional relationships are challenged by global interconnectedness. The concept of 'reliable' futures extrapolated from 'known' elements, as a continuation of present practice is no longer viable.

Clearly trend forecasts are tightly edited productions that use a particular language that is entirely open to misinterpretations. They are designed to be used in a system where everyone understands how that system functions. There are many implicit layers of understanding and unspoken complexities that confound expectations of a simplistic reading by practitioners from alternative systems or models of practice. Sustainable practice demands that trends and traditions negotiate their different cultural models and the responsibility for this lies with all of us. Projects like those conducted by Patty Johnson, Maham Anjum-Chesti and Arabel Lebrusan indicate that careful and consistent collaborative practice based on thorough research and mutual respect can offer long-term and scalable solutions in academic, NGO and commercial arenas.

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# About the authors

**Simon Fraser** is Course Director, MA Design; Ceramics, Furniture or Jewellery at Central Central Saint Martins College of Art and Design, University of the Arts London. He has a professional career as a designer, consultant, educator, writer and performer. He has lectured widely internationally and has presented his live arts work at the Victoria and Albert Museum London, The ICA London and most recently at Somerset House , London. With wide experience of luxury brands consultancy, his current research focus is the relationship of design to micro and small scale manufacture.

**Ulrike Oberlack** is Associate Lecturer, MA Design; Ceramics, Furniture or Jewellery and PhD researcher on wearable light at Central Saint Martins College of Art and Design, University of the Arts London. A background in science and change management informs her research thinking for this paper. Her own work showcases an approach to working with light on the body as an 'immaterial medium' and encompasses dance, film and photography.

**Elizabeth Wright** is Associate Lecturer, MA Design; Ceramics, Furniture or Jewellery, Central Saint Martins College of Art and Design and led a survey on approaches to craft education for the National Arts Learning Network NALN, as Research Fellow for the University of the Arts London. With long term experience in the fashion industry, architectural and interiors development Wright frequently commentates on developments in design thinking

Fraser, Oberlack and Wright have consolidated their extensive range of professional experience across disciplines in art and design into **ultra-indigo**, their design and design strategy consultancy.

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